



## IMPORTANT

Keep this service manual to hand during the machine/  
equipment's working life

# HERON SPRAYING BOOM

user manual

ENGLISH

|               |                                    |
|---------------|------------------------------------|
| Serial number | Edition <b>0</b><br><b>07-2003</b> |
|---------------|------------------------------------|

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**GENERAL AND SAFETY  
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# GENERAL AND SAFETY INFORMATION

user manual

Serialnumber

Edition **0**  
**07 - 2003**

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## PURPOSE OF THE MANUAL

The current manual is part of the equipment and has been supplied by the manufacturer as an essential guide to those who will be involved with the machinery during its working life.

In addition to adopting good use techniques, the recipients must carefully read and strictly apply this information. This information has been produced by the manufacturer in his own original language (Italian) and can be translated into other languages to satisfy legal and/or commercial requirements.

Time dedicated to reading this information will avoid personal safety, health risks and economic damages. In the event that supplementary information to the actual machine set up is found in this manual it will not interfere with reading.

Please keep it in a safe, easily accessible place so that it will be handy for reference when required.

The manufacturer reserves the right to carry out modifications without obligation of prior notice.

To better stress the importance of some passages or to indicate important specifics, symbols, whose meanings are described as follows, have been adopted.



### Warning - Caution

Indicates critically dangerous situations that, if neglected, can result in serious personal safety and health hazards.



### Danger - Attention

Indicates that suitable actions must be employed in order to avoid personal safety, health hazards and economic damages.



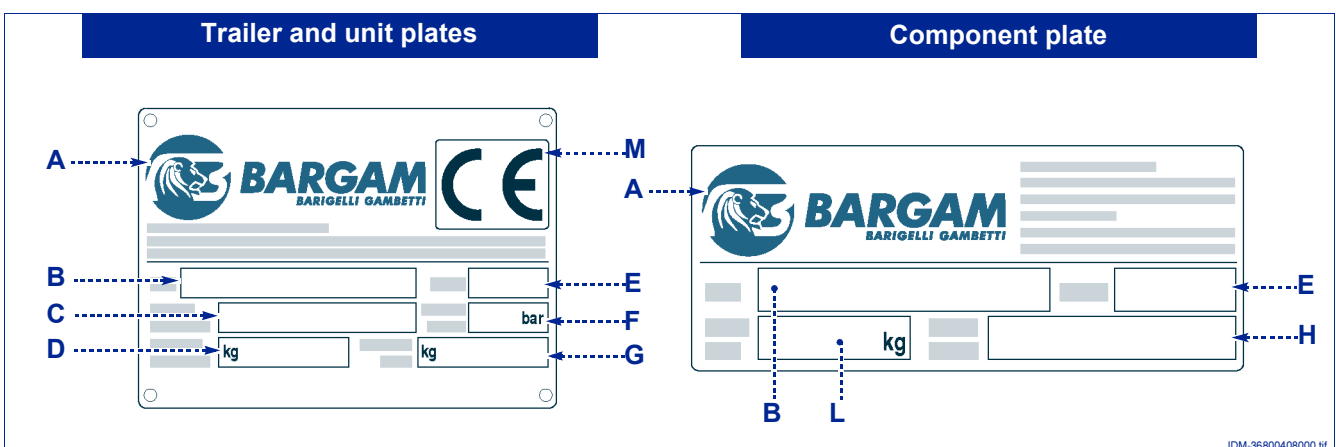
### Important

Indicates particularly important technical information that should not be neglected.

## EQUIPMENT AND MANUFACTURER IDENTIFICATION

The ID plate shown is attached to the equipment and/ or its components.

It details references and all important operational safety requirements.



A) Manufacturer identification.

B) Model.

C) Identification number

D) Total weight of the maximum configuration

E) Year of manufacture.

F) Water system maximum pressure (bar).

G) Empty weight in the maximum configuration (Kg).

H) Manufacturing order number

L) Total weight

M) EC conformity mark.

## SERVICE PROCEDURE

Please refer to the Manufacturer's service centres for any need.

## DOCUMENTATION ENCLOSED

The following documentation is included with this manual.

- Wiring diagrams.
- Hydraulic system diagrams.

## SAFETY REGULATIONS

### General regulations

This equipment has been designed and manufactured with all due care and attention to health and safety issues. In addition to observing the specific laws in force, the manufacturer has adopted all "exemplary construction technique principles". The purpose of this information is to advise the operators to use extreme caution to avoid risks. However, discretion is invaluable. Safety is also the responsibility of those who use the equipment.

Carefully read the instructions published in the supplied manual and found directly on the machine while strictly observing those concerning safety. Time dedicated to reading will prevent unfortunate accidents; remembering what one was supposed to do when the damage is already done is always too late.

Pay attention to the meanings of the symbols on the applied stickers; their shape and colour are significant to safety ends. Keep them legible and observe the shown information.

Never tamper, dodge, eliminate or by-pass the safety devices installed on the machine. Neglect to respect this requirement may cause serious risk to personal safety and health.

Any maintenance or other work on the equipment must always be carried out by trained, experienced technicians with specific and certified competence in this field. Neglect to observe these requirements may prove hazardous to personal safety and health.

Only wear and use the protective clothing and/or devices indicated in the instructions provided by the



### Important

**For every technical service request regarding the machine, please indicate the data found on the identification plate, the approximate hours of use and the type of fault detected.**

- Oleodynamic system diagrams.
- Documentation on commercial components (pumps, gears, etc.).
- Warranty.
- Declaration of conformity.

manufacturer or work safety laws in force when operating the machine.

Some phases may require the help of one or more assistants. In these cases such persons should be suitably trained and informed on the type of activity being performed, so as not to cause damage to the health and safety of persons.

### Handling and loading specifications

Handling and loading must be carried out as per the instructions on the packaging, on the equipment itself and in the manufacturer's handbook.

Handling, loading and unloading must be carried out by trained personnel with specific competence in this field. During manoeuvres while using the equipment the driver must be familiar with the procedures necessary to carry out these operations safely.

The equipment may only be loaded onto and transported by hoisting devices having sufficient carrying capacity, anchored at the points specified by the manufacturer. Personnel who are authorised to perform these operations must possess specific skills and experience, to safeguard themselves and others involved.

Before transportation, make sure that the equipment and all its components are safely anchored to the hoisting device and that its total bulk (outline) does not exceed specifications. Place the required signals if necessary.

The equipment may have to be moved from place to place frequently. To avoid sudden, uncontrolled

movement make sure that all parts which could cause this have been safely locked before transportation.

Approved equipment may be driven on public roads by a licensed driver. Make sure that all the parts which could cause sudden, uncontrolled movement have been safely secured before transportation, and check that the total bulk (outline) does not exceed specifications. Place the required signals if necessary.

### **Operation and use regulations**

The operator must be familiar with the use of the equipment and be suitably qualified and experienced for this type of task.

Even after having been adequately trained on machine use, perform trial manoeuvres to familiarise the operator with machine controls and functions, start up and arrest in particular, on first use if necessary.

The equipment may only be used for the purposes specified by the manufacturer. Improper use may cause health and safety risks to persons and economic damage.

The equipment has been designed and produced to fulfil all the operations specified by the manufacturer. Tampering with any device to achieve services other than those provided may be hazardous to personal safety and health and provoke economic loss.

Do not use this equipment unless all the safety devices have been installed and are working perfectly. Neglect to observe this requirement may be hazardous to personal safety and health.

While preparing and using chemical substances all necessary safety precautions should be taken to avoid health and safety risks to personnel and environmental damage.

All residual chemical substances must be disposed of properly according to local laws and regulations. Avoid polluting the environment.

Equipment must always be parked in an appropriate area, where it does not block or endanger traffic. Turn the engine off and take adequate precautions to prevent unauthorised personnel from accessing the driving seat.

Prevent unauthorised personnel from accessing the area in which the equipment is being used. If necessary cease operations immediately and have the area at risk cleared.

### **Adjustment and maintenance regulations**

Keep the machine in maximum working conditions by performing the programmed maintenance operations advised by the manufacturer. Good maintenance achieves the best machine performance, longer machine life and constant observance of the safety regulations.

Activate all of the security devices provided and evaluate the necessity to adequately inform personnel operating in the near vicinity before performing maintenance or adjustments on the machine. In particular, confine the neighbouring areas to impede access to the devices that could, if activated, produce unexpected danger conditions provoking hazards to personal safety and health.

All maintenance procedures that require precise technical competence or specific skills must be exclusively performed by qualified personnel with acquired certified experience in the specific field.

To perform maintenance in areas that are not easily accessible or dangerous, establish suitable safety conditions for operators and others according to the laws in force pertinent to work safety conditions.

Replace deteriorated parts with originals. Use oils and lubricants indicated in the manual. All these measures can ensure the preservation of the machine and foreseen safety level.

Do not litter the environment with pollutant material; perform disposal according to the pertinent laws in force.

## SAFETY AND INFORMATION MARKINGS

Some of the following signals are placed on the equipment, the correct position is shown in the paragraph "signals position". Their meaning is explained below.



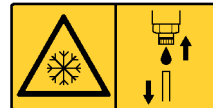
**Danger:** read the manual carefully before any intervention.



**Danger of amputation for upper limbs:** do not put your hands in mechanisms with moving parts.



**Danger:** turn the engine off and remove the key from the ignition before any operation.



**Danger: low temperature:** disconnect the pressure gauge before winter storage.



**Danger:** do not place any part of your body in the tank.



**Danger of trapping and dragging:** do not put your upper limbs in mechanisms with moving parts.



**Danger:** do not exceed the pressure shown.



**Caution - danger to body:** do not go near the moving components.



**Danger:** before inserting the cardan shaft check the direction of rotation and make sure the max. rpm doesn't exceed the indicated value.



**Danger of crushing upper limbs:** do not access this area while parts are moving.



**Danger of electric shock:** beware of the high voltage electric lines while unfolding and folding the boom.



**Danger of crushing upper limbs:** be careful during tractor height adjuster hitching.



**Danger to people walking through:** make sure there are no unauthorised people in the machine's operating range.



**Danger: Hot surfaces:** be careful of hot surfaces.



**Caution - risk of corrosion:** suitable gloves must be worn when handling chemical products.



**Danger of impact:** be careful of protruding parts.



**Caution - risk of falling:** do not climb, only use suitable means to access the higher parts of the machine.



**Prohibited use:** do not spray water under pressure to avoid damaging parts.



**Danger: fluid escaping under pressure:** do not touch nor approach with any part of your body to avoid abrasions.



**No access to unauthorised people:** do not stand in or walk through the machine's operating range.



**Grip points:** indicates the manual grip points.



**Protective gear must be worn:** protective earmuffs must be worn while operating the machine.



**Mandatory use of fresh water:** wash your hands after each contact with the chemicals used.



**Mask must be worn:** to protect the respiratory tract when handling and using chemicals.



**Boots must be worn:** to protect feet and legs when handling and using chemicals.



**Gloves must be worn:** to protect hands from abrasions.



**Protective clothing must be worn:** to protect the body when handling and using chemicals.



**Mandatory reading of the User manual.** The person in charge of the equipment operation shall read the manual in order to know the position and the function of controls as well as to familiarize with all information contained. Always keep the document within reach.



**Clean water must be used:** to fill up the clean water tank.



**Height adjustment signal:** this indicates the height adjustment points when using a fork-lifting device.



**Height adjustment signal:** this indicates the height adjustment points when using a lifting hook.

# HERON

## spraying boom

user manual

Serial number

 Edition **0**  
**07-2003**

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### IMPORTANT SAFETY NOTE

The information published in this booklet regards the operational aspects of the operator unit installed on the machine. It is however necessary that you carefully read the general safety regulations published in Booklet 1 and those

pointed out with relevant symbols in order to safeguard people from risks. Remember that prudence is irreplaceable. Safety is also in the hands of all the operators who interact with the machine.

## TECHNICAL INFORMATION

### EQUIPMENT GENERAL DESCRIPTION

The spraying boom, from now on called equipment, was designed and built to be installed on a machine for spraying chemical products on tilled land and/or products.

It is to be put on the height adjustment device and on the self-levelling device so that it remains perfectly

parallel with the ground, even in the event the ground is uneven.

The equipment is divided into folding boom sections in order to adapt it to the spraying width and so as to reduce the space occupied during transfer.

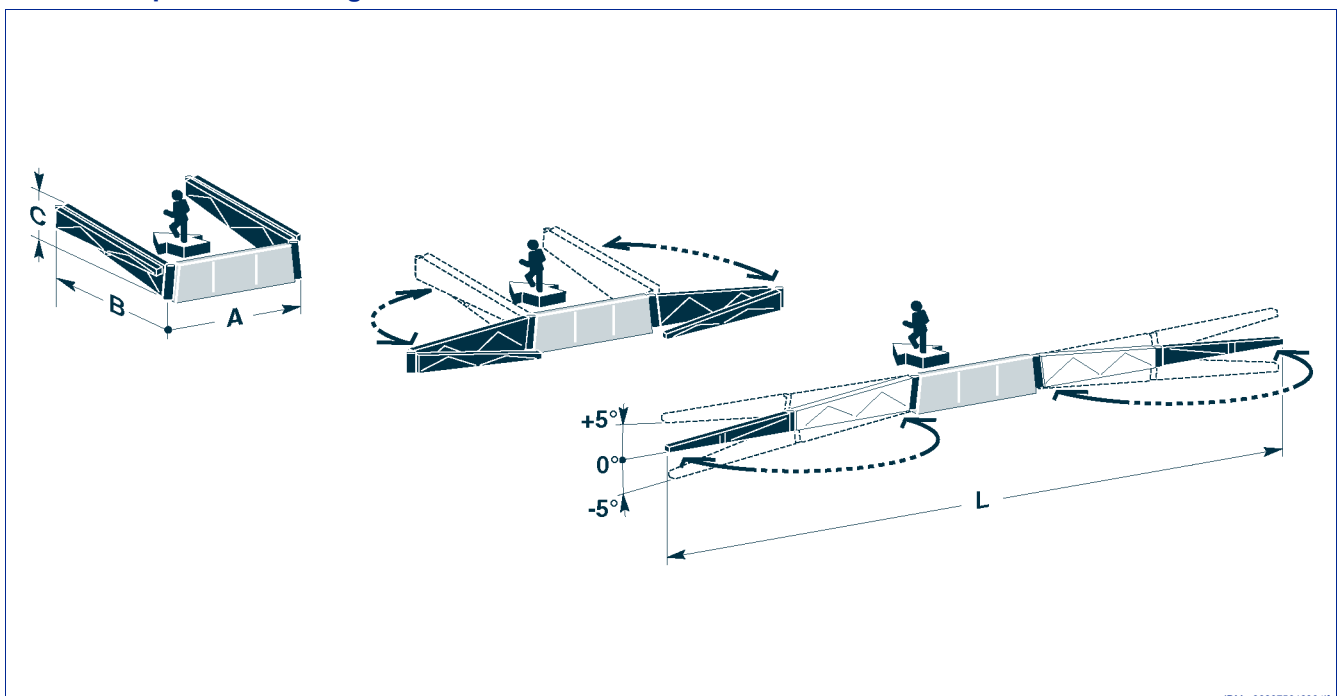
### TECHNICAL SPECIFICATIONS

| Line  | Width (m) W | Size |      |      | Weight          |                 | Qty. Jets (500 mm) |
|-------|-------------|------|------|------|-----------------|-----------------|--------------------|
|       |             | A mm | B mm | C mm | (*) NEW EL (kg) | (**) NEW E (kg) |                    |
| HERON | 18          | 2480 | 3843 | 1985 | 490             | 485             | 36                 |
|       | 20          | 2480 | 4775 | 1360 | 586             | 581             | 40                 |
|       | 21          | 2480 | 4775 | 2360 | 588             | 583             | 42                 |
|       | 24          | 2480 | 5505 | 2727 | 615             | 610             | 48                 |
|       | 24,5        | 2480 | 5505 | 2727 | 616             | 611             | 49                 |

(\*) Boom with NEW EL self-levelling device (can be installed on trailed tanks, self-propelled sprayers and mounted units with pivoting wheels).

(\*\*) Boom with NEW E self-levelling device (can be installed on mounted units).

### Technical specification diagram



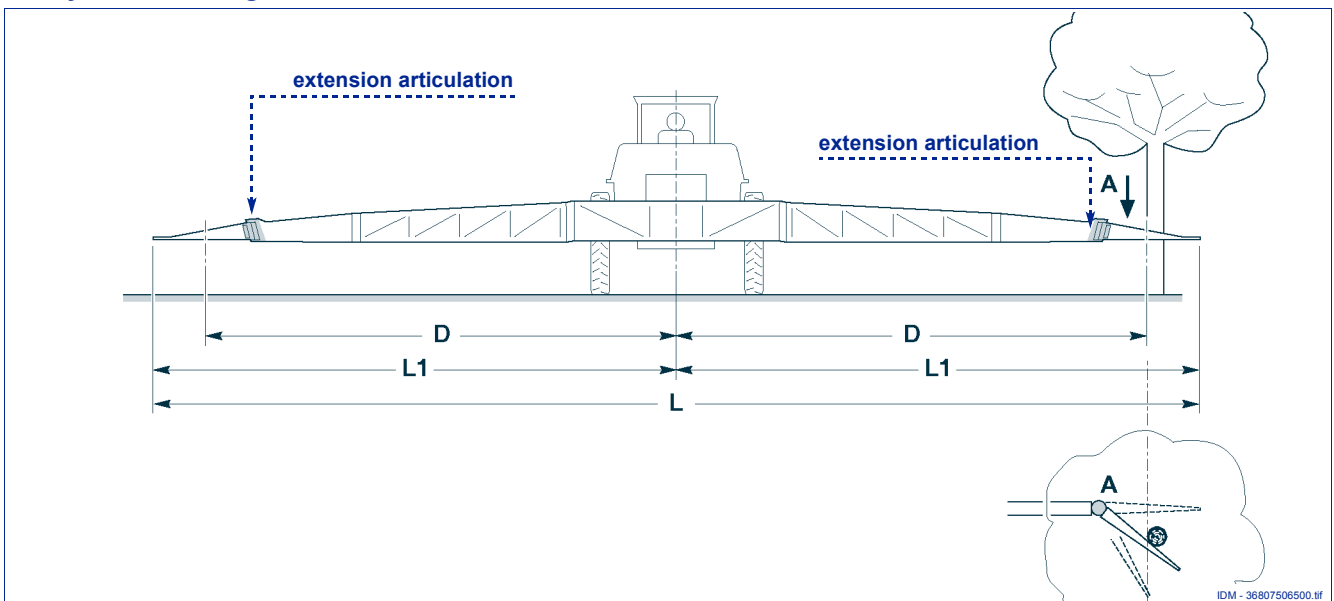
## SAFETY DEVICES

- **Extension articulation:** to allow the end of the extension to turn so as to get past obstacles. In order to get past the obstacle without damaging the equipment, it is necessary to keep a distance higher than the value (**D**) given in the table.

**Safety distance table**

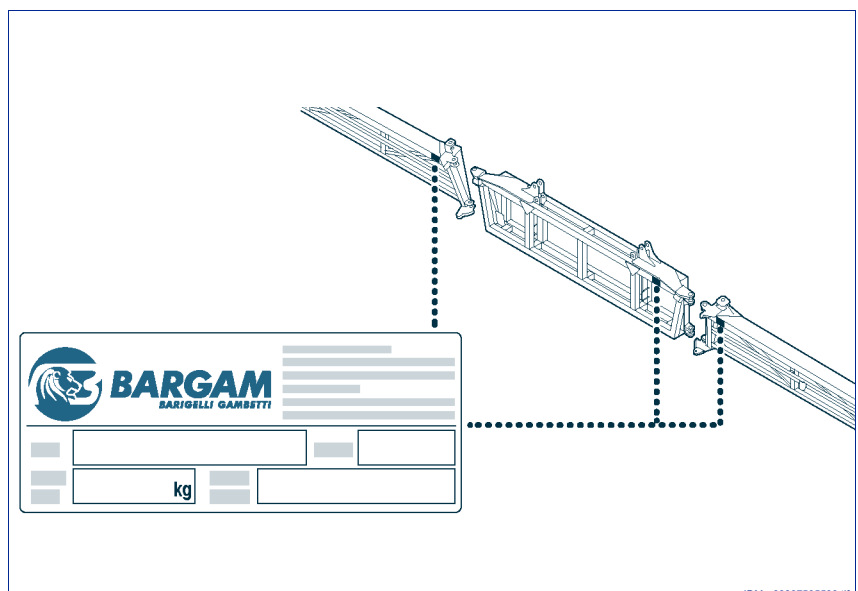
| Width<br><i>W</i> | Width<br><i>W/1</i> | Safety distance<br><i>D</i> |
|-------------------|---------------------|-----------------------------|
| 18                | 9                   | 8,1                         |
| 20                | 10                  | 9                           |
| 21                | 10,5                | 9,5                         |
| 24                | 12                  | 10,8                        |
| 24,5              | 12,25               | 11                          |

**Safety distance diagram**



## IDENTIFICATION PLATE POSITION

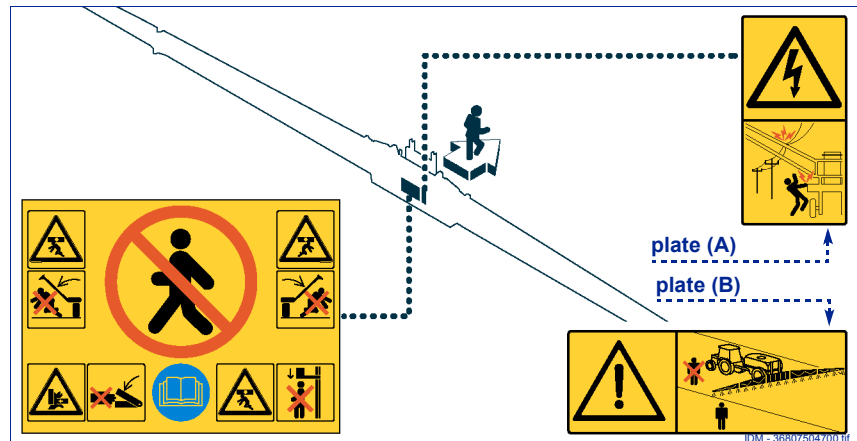
The figure points out the positions of the identification plates of the components.



## POSITION OF SIGNALS

The figure shows the location of all safety plates, while their meaning is explained in booklet 1.

The plates (**A** and **B**) supplied with the manual have to be placed inside the tractor cab, in a visible position.



## INFORMATION ABOUT HANDLING AND INSTALLATION

### HANDLING INSTRUCTIONS

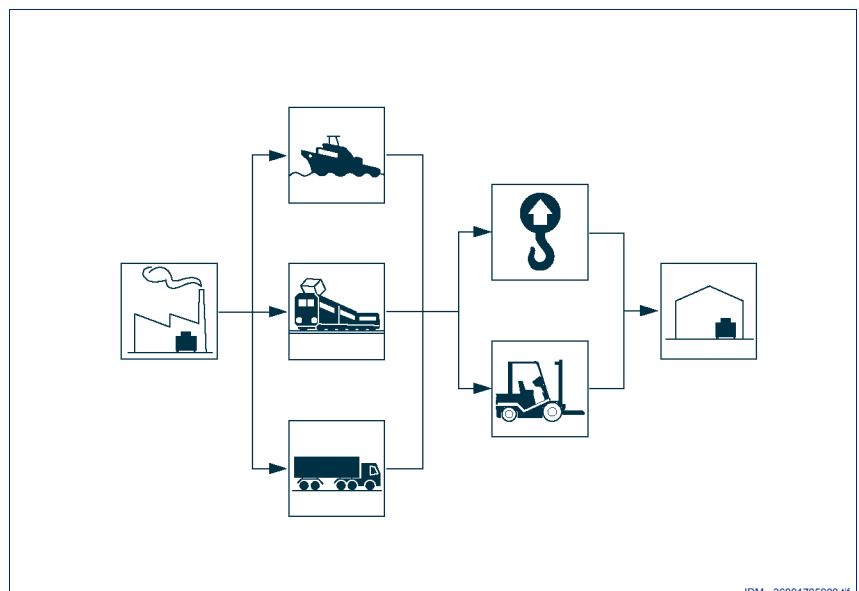
Comply with the information provided by the manufacturer, found on the equipment and in the instruction manual, when carrying out handling and loading operations.

### PACKING AND UNPACKING

- The equipment is to be placed on a loading platform, protected and adequately secured. To make transport easier, it can be shipped with several components disassembled.
- When unpacking, check that all the components are intact and in the exact quantities.
- The packing material is to be disposed of properly, in observance of the laws in force.

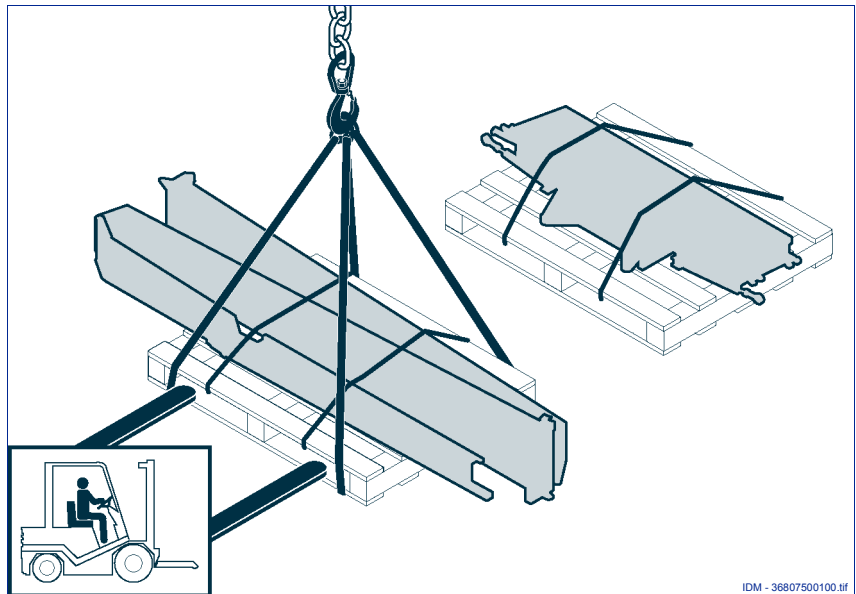
### LOADING AND TRANSPORTATION

Depending on the destination, loading and transport can be carried out with different means. The diagram shows the most commonly used solutions. Secure the means properly during transportation in order to prevent untimely shifting.



### HANDLING AND LIFTING

The equipment can be handled with a lifting device with forks or hooks having a sufficient capacity. Position the lifting device as shown in the figure. Avoid sudden manoeuvres.



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### INSTALLATION INSTRUCTIONS

Whoever performs the installation must prepare satisfactory safety conditions in advance in order to ensure their own safety and that of the operators involved.

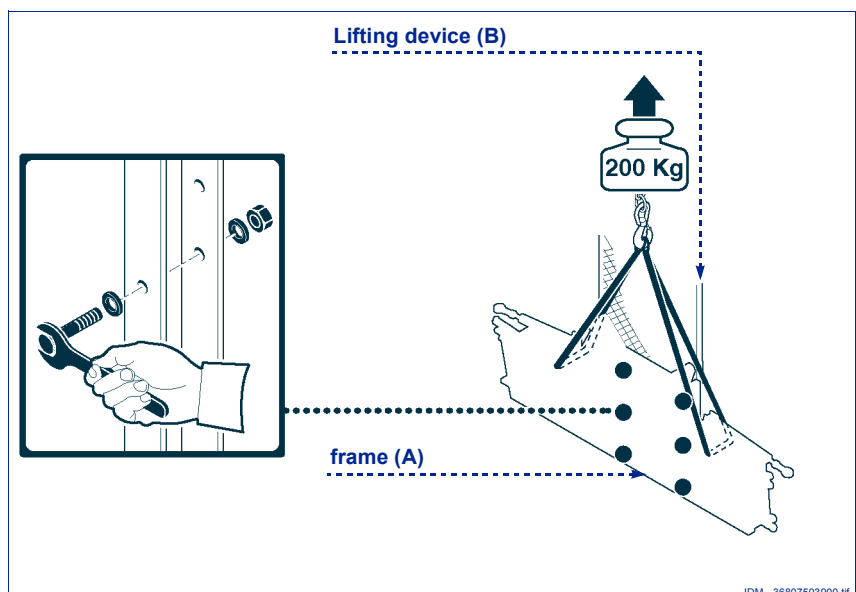
### INSTALLATION OF DISASSEMBLED PARTS

Follow the instructions given below so as to install and assemble the spraying boom properly.

### INSTALLATION OF MIDDLE FRAME (NEW EL SELF-LEVELLING DEVICE)

Proceed in the way indicated.

- 1 - Lift the middle frame (A) of the boom already mounted on the self-levelling device (see "Self-levelling Device" booklet) and fasten it to the sliding frame of the lifting device (B) or to the shock absorber, if required.

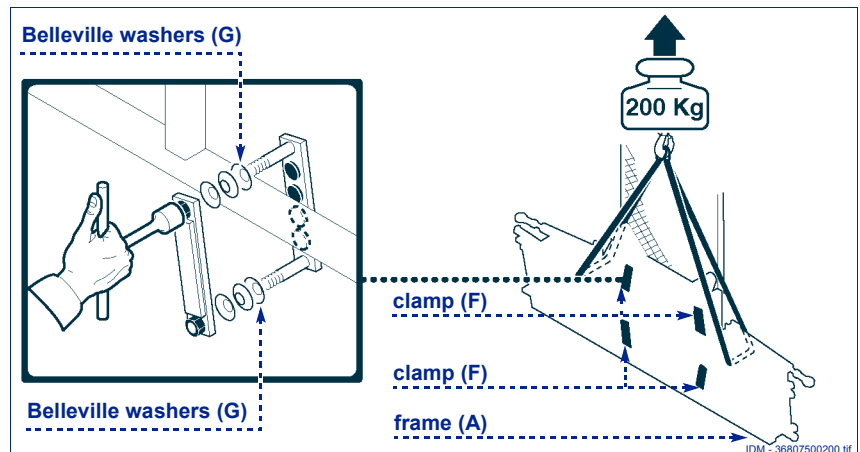


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## INSTALLATION OF MIDDLE FRAME (NEW E SELF-LEVELLING DEVICE)

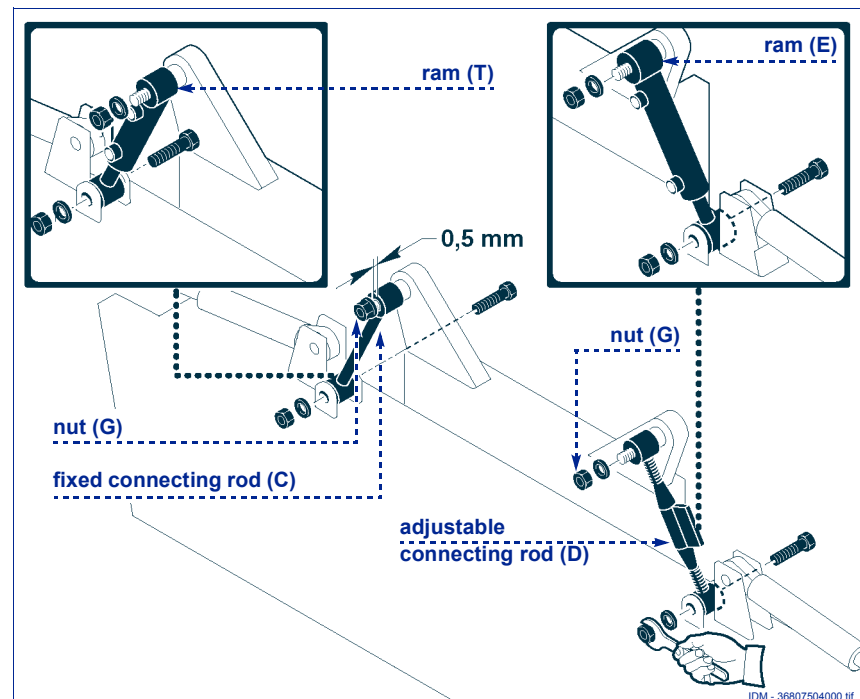
- 1 - Lift the frame (A) and place it on that of the sliding self-levelling device.
- 2 - Insert the Belleville washers (G) as shown in the figure.
- 3 - Mount the clamps (F) and secure them with the nuts without tightening them completely.



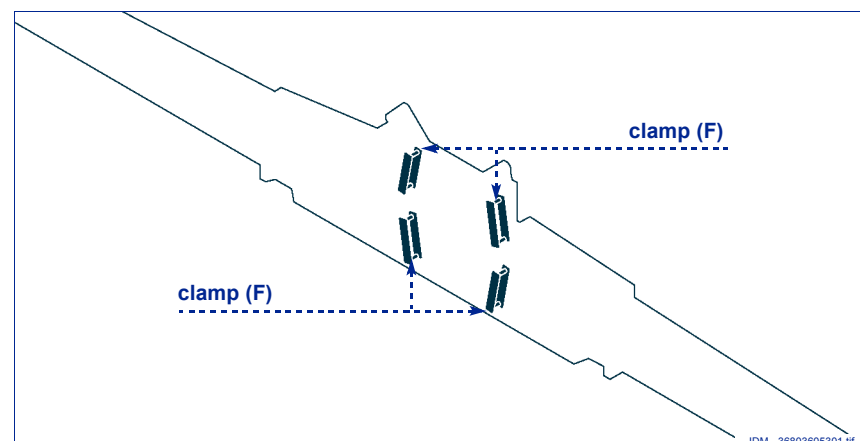
- 4 - Install the connecting rods (C-D).  
On request, they can be replaced with hydraulic cylinders (E-T).

### Important

In order that the boom unit will be able to swing freely, screw the nuts (G) so that there is a backlash of ~ 0.5 mm between the washer and connecting rod.



- 5 - By means of clamps (F) adjust the swing of the booms (see the Self-levelling Device booklet).



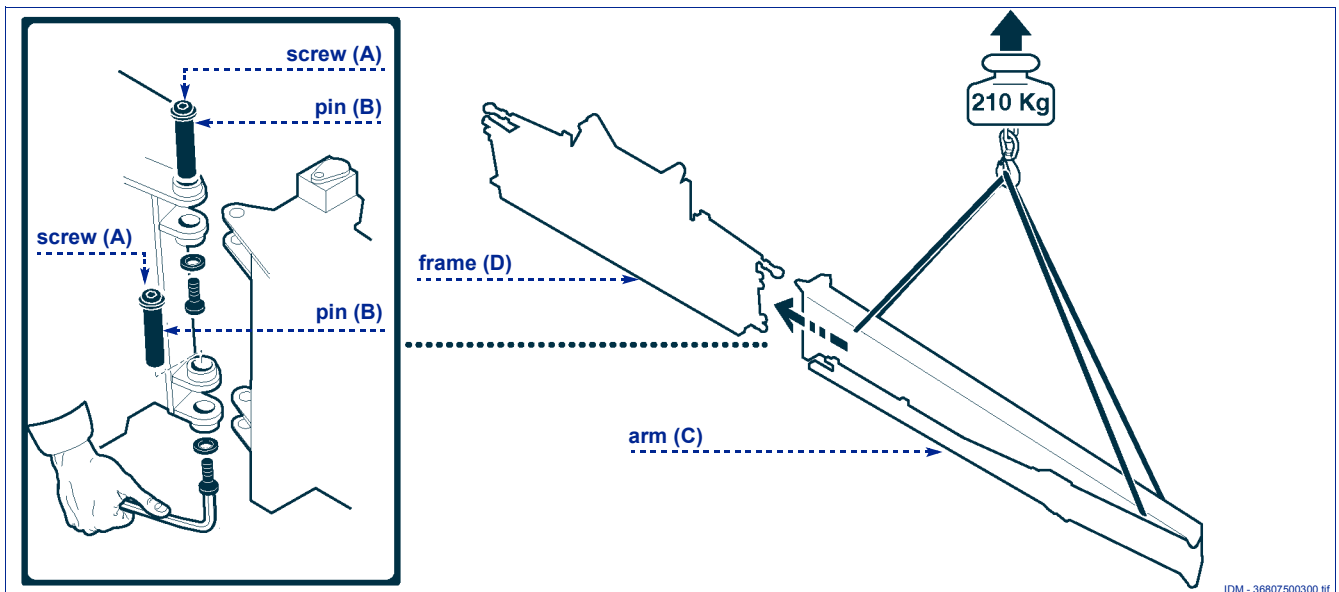
## INSTALLATION OF ARM



### Caution - Warning

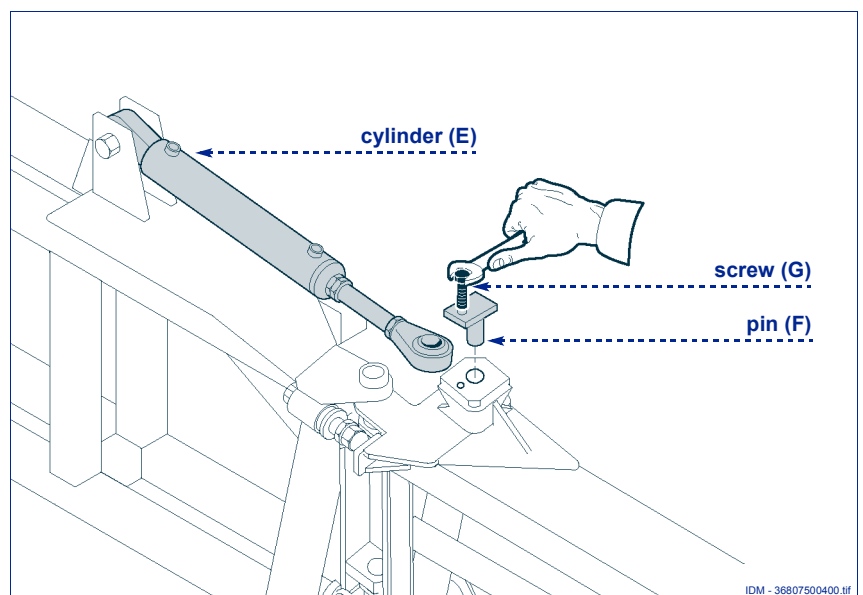
Screws (A) are tightened and locked using **LOCTITE** in order to prevent them from coming loose, which could cause the pins (B) to accidentally become extracted. Therefore, these pins have to be adjusted as shown in the figure and have to be assembled and disassembled through the lower screws.

1 - Lift the arm (C) and fasten it to the middle frame (D) with the respective pins after having greased the parts and their seats.



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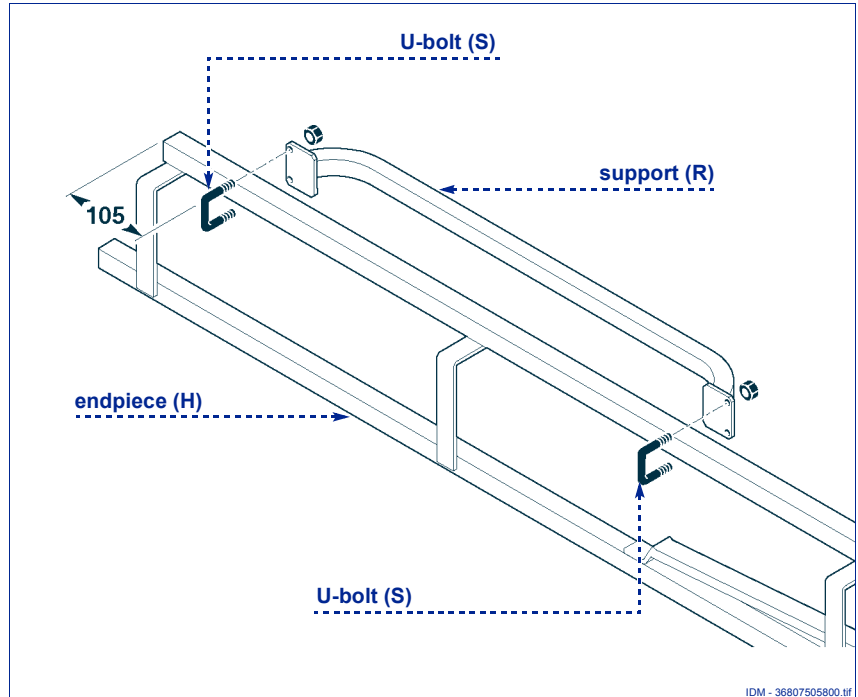
2 - Extract the cylinder stem (E) and fasten it to the arm with the pin (F) and the locking screw (G).



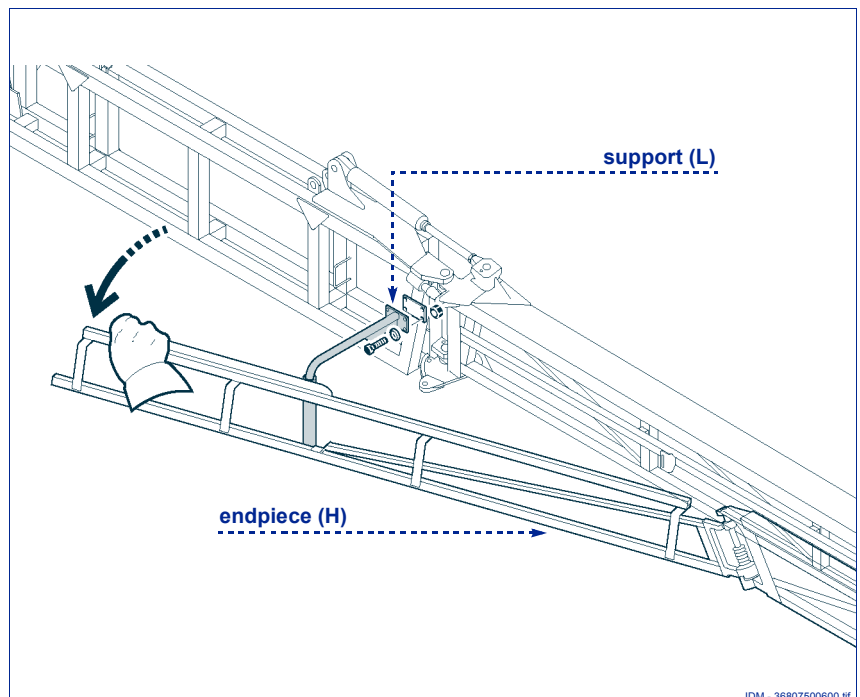
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**Only for 24 - 24.5 m booms**

- Mount the support (R) on the endpiece (H) using the U bolts (S), as shown in the figure.



- Pull the endpiece (H) and secure the support (L) to the middle frame, as shown in the figure.



3 - Assemble the opposite arm in the same way.

4 - Connect the ropes (**M**) to the arms with the relative screws, as shown in the figure.

**i Important**

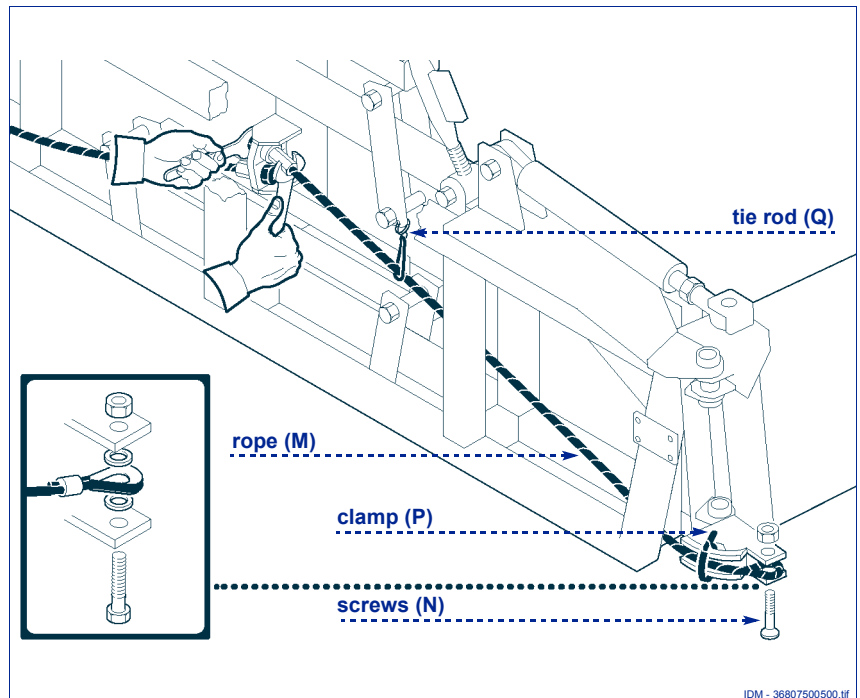
The screws (**N**) must always be mounted turned upwards, as shown in the figure.

5 - Fold the arms of the boom and tighten the ropes (**M**) (see Self-levelling Device booklet).

6 - Lock the ropes (**M**) to the support using the clamp (**P**).

**i Important**

Make sure the tie rod (**Q**) bears the strain of the ropes (**M**).

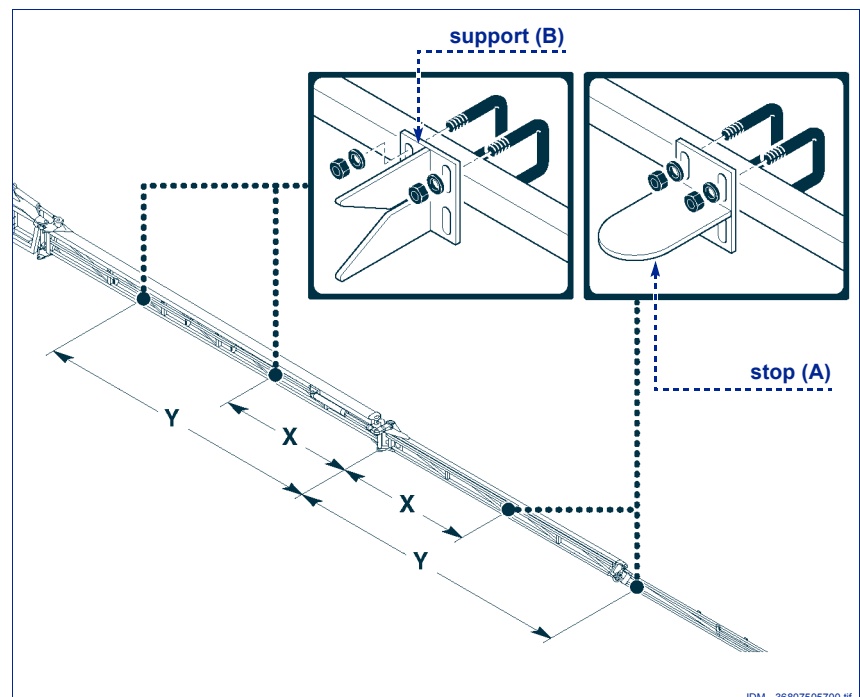


## INSTALLATION OF EXTENSION LOCKS

1 - Mount the stops (**A**) on the extension – one on the first piece and the other on the endpiece.

2 - Mount the supports (**B**) on the primary arm at the distance shown in the figure.

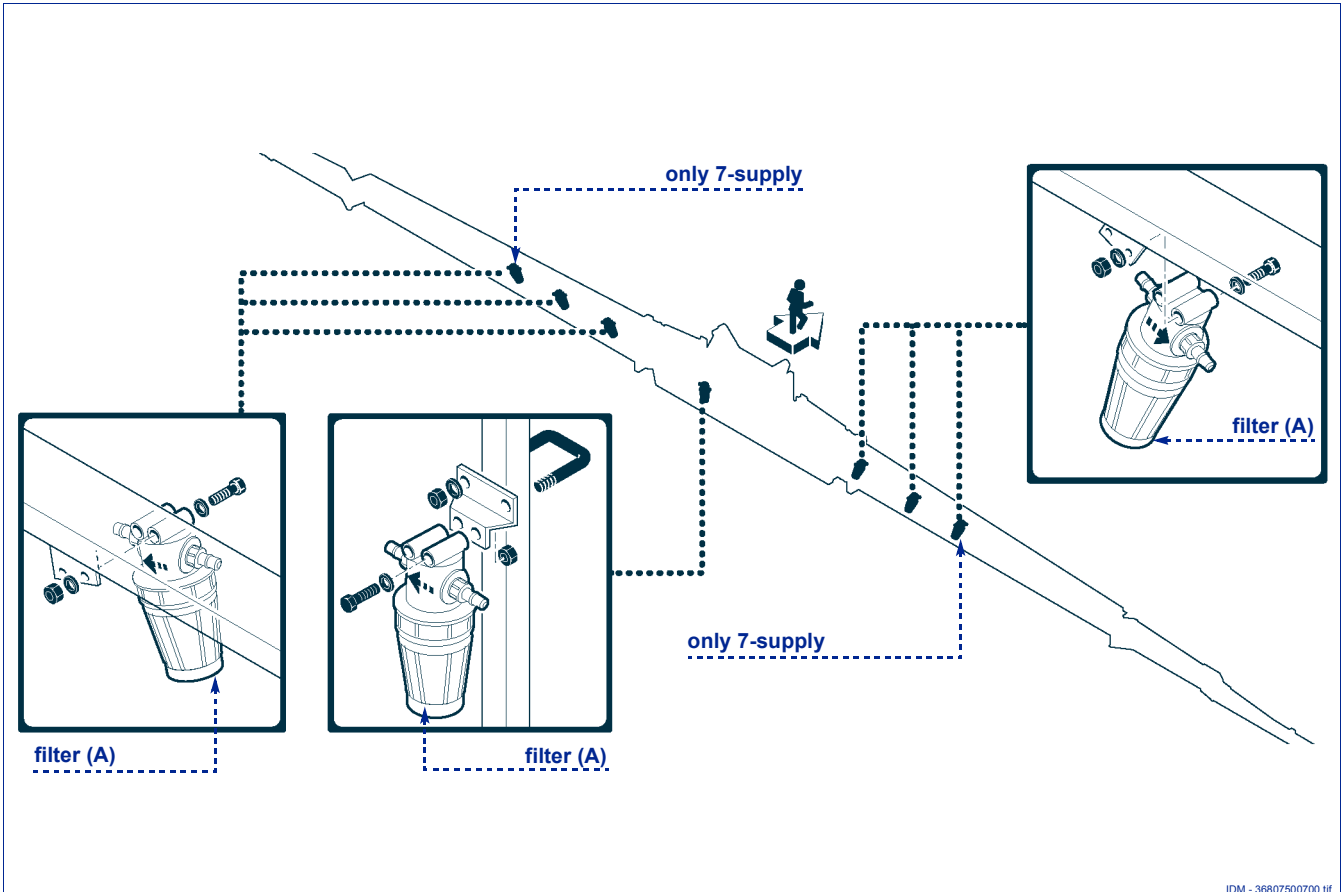
3 - Make sure that the supports (**A - B**) engage properly during folding.



**INSTALLATION OF FILTERS (IF REQUIRED) AND JETS**

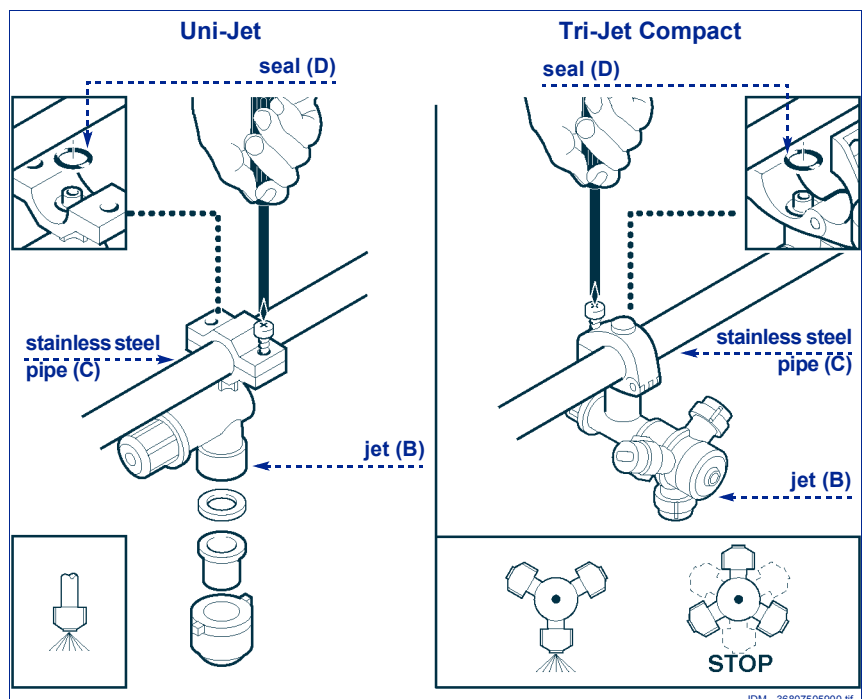
Proceed in the way indicated.

1 - Install the filters (A) as shown in the figure.



2 - Mount the jets (B) next to the outlet holes of the stainless steel pipes (C) (see the "Jet Layout" diagram, page 12).

**Important**  
Properly mount the seals (D).

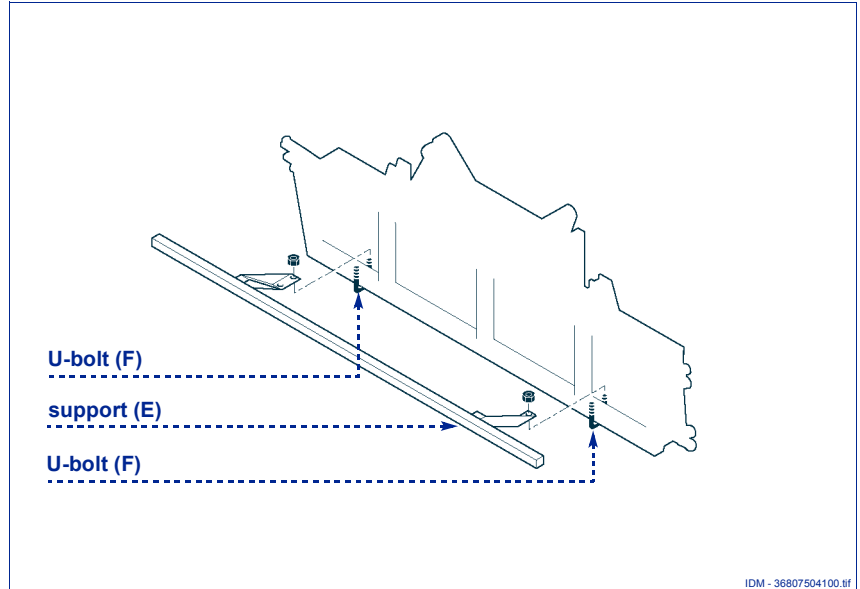


3 - Mount the jet support (E) using the U bolts (F).

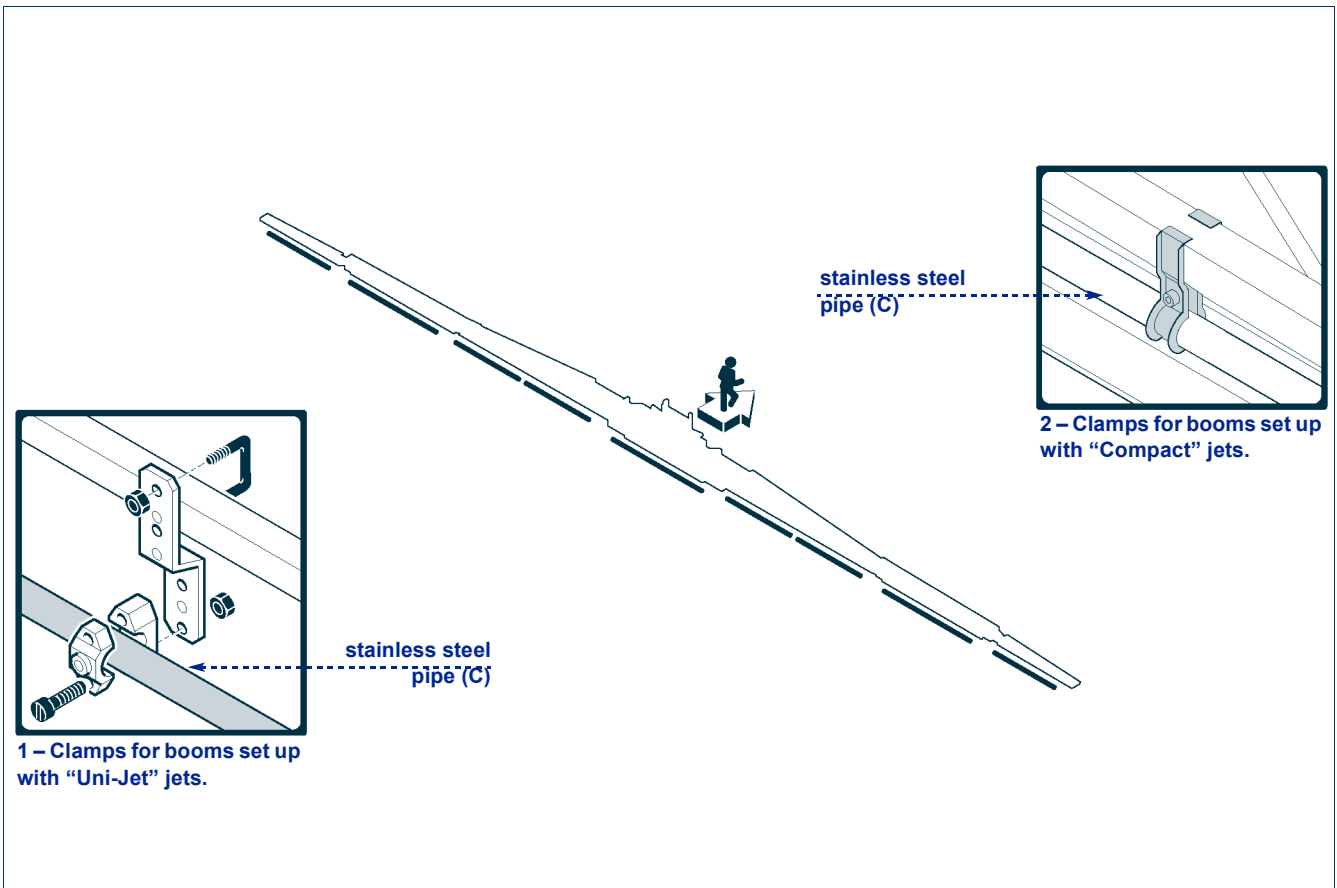


**Caution - Warning**

**Make sure the support is positioned centred with the frame.**



4 - Fasten the stainless steel pipes (C) to the spraying boom using the relative supports, depending on the type of jets installed (see figure).



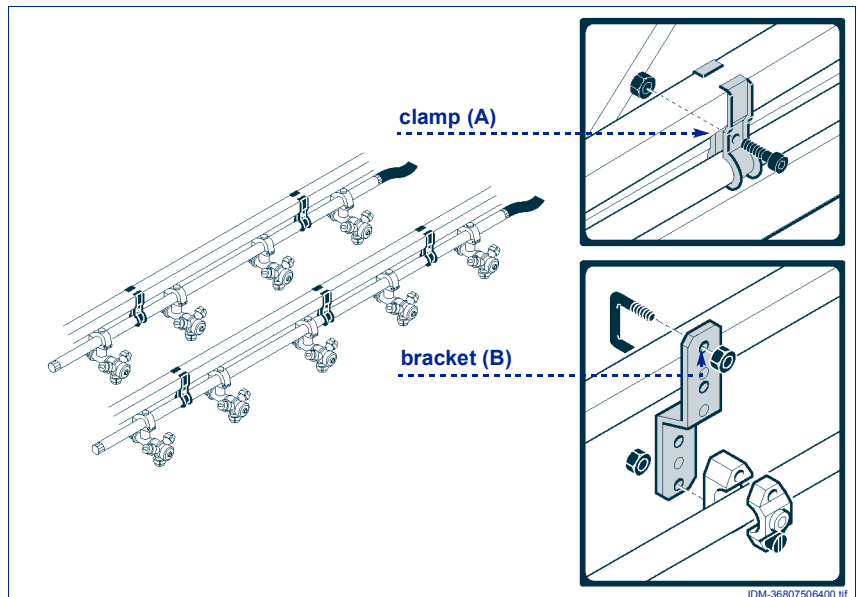
### JET AND CLAMP POSITION (FOR STANDARD STAINLESS-STEEL TUBES HAVING A 50 cm CENTRE DISTANCE HOLE)

Position the nozzle holder hoses depending on the length of the boom while referring to the diagram indicated below.

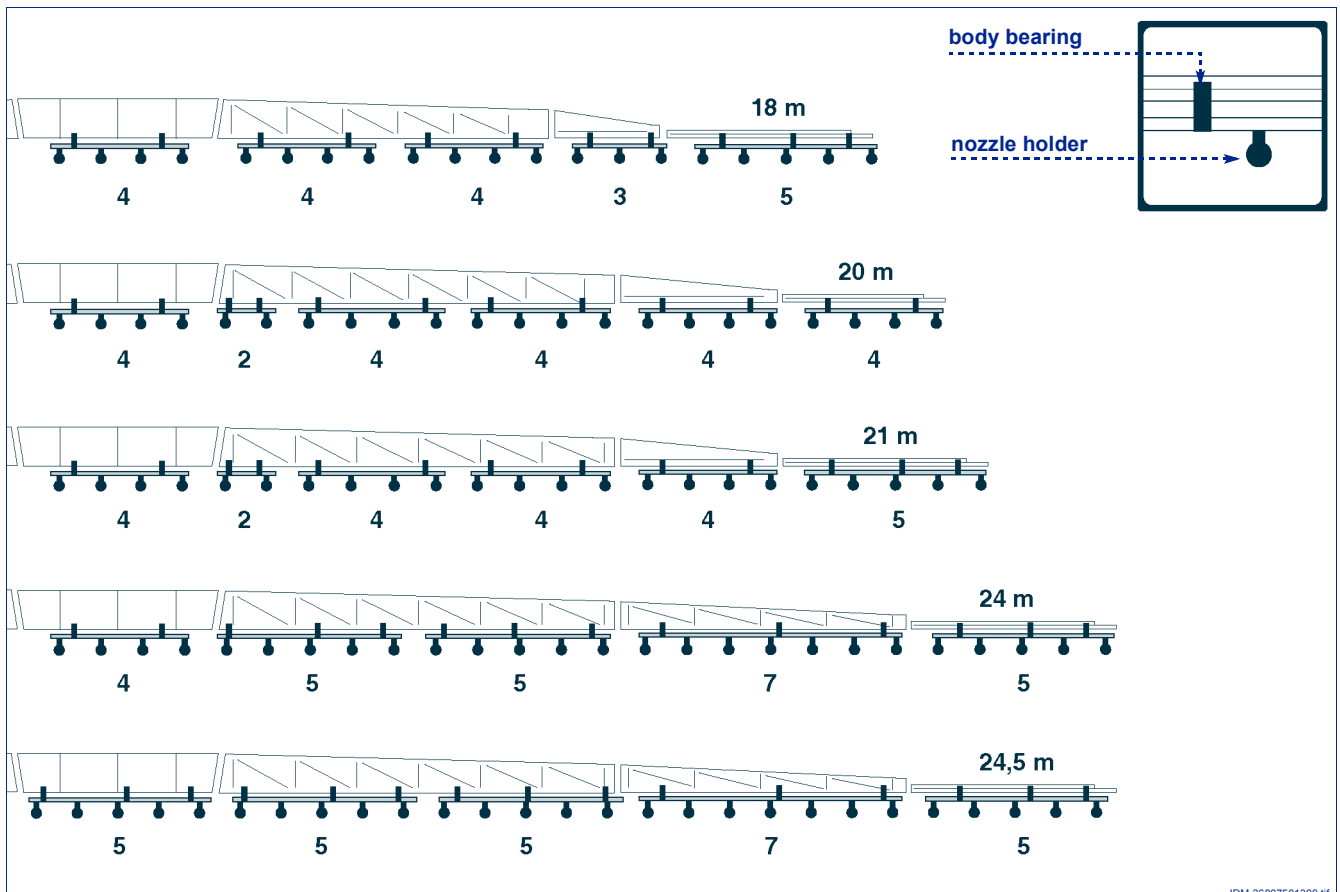
Also the positions and quantities of body bearings for each hose are shown in the diagram on page 13.

#### Important

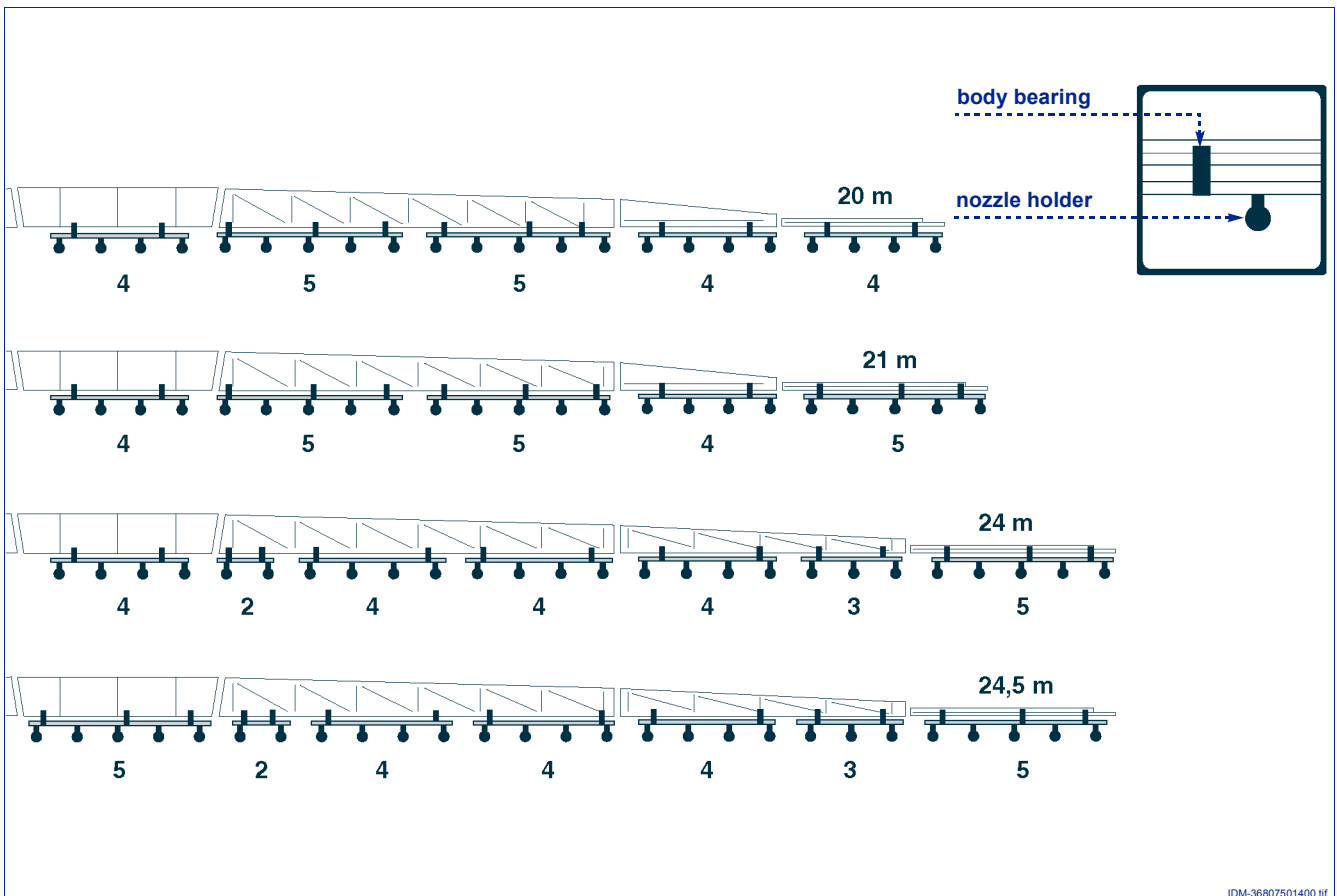
Use two pair of clamps (A) or two brackets (B) for hoses having up to four jets, and use three pair of clamps (A) or three brackets (B) for hoses with more than four jets.



### Nozzle and clamp position diagram (for 5-supply booms)



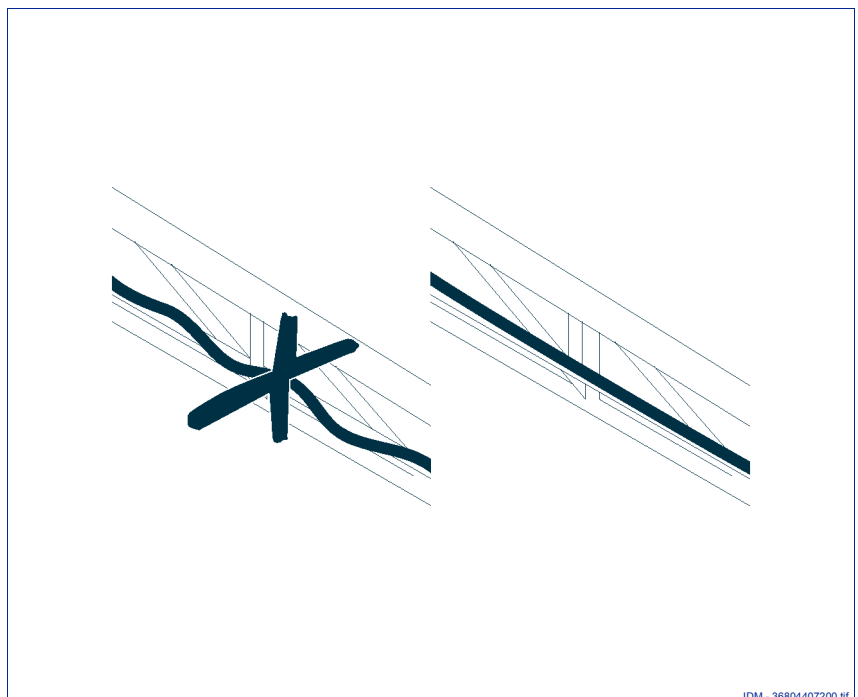
Nozzle and clamp position diagram (for 7-supply booms)



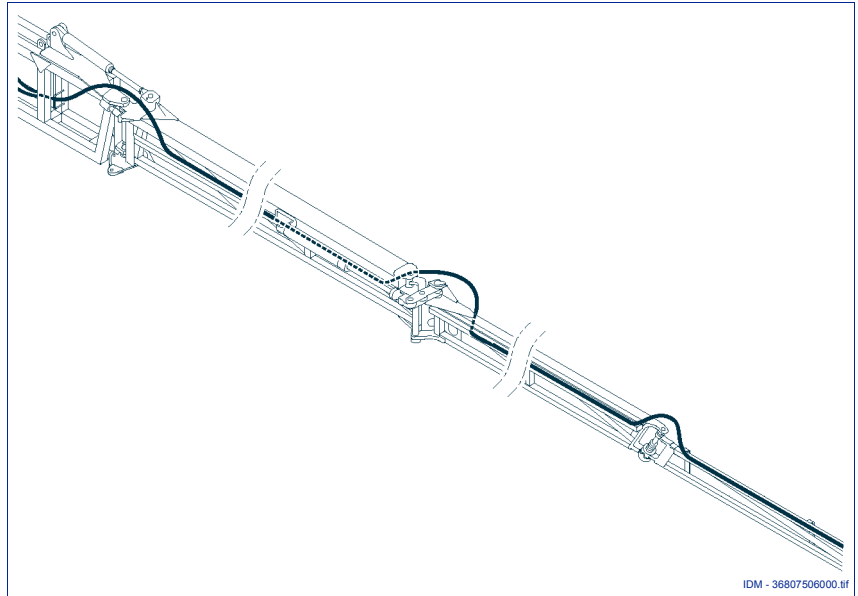
**INSTALLATION OF WATER HOSES**

Proceed in the way indicated.

- 1 - Lay the hoses down on the boom linearly (see the figure).



- 2 - Leave sufficient length so as to not impede the movements at the articulation points of the boom.
- 3 - Connect the hoses (see "water connection diagram").

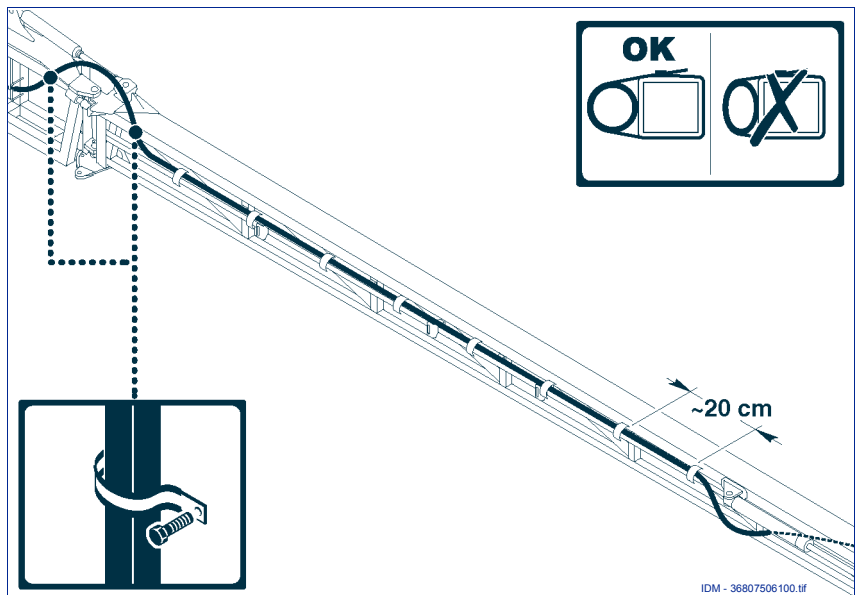


- 4 - Secure the hoses to the boom with clamps spaced out ~ 20 cm.

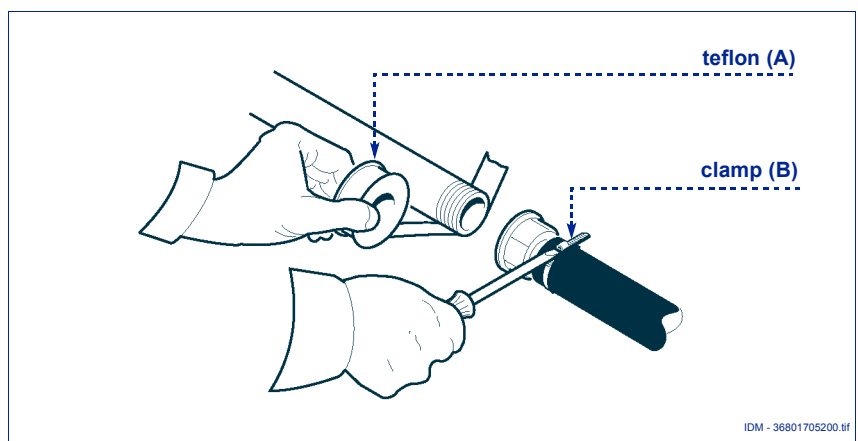


**Important**

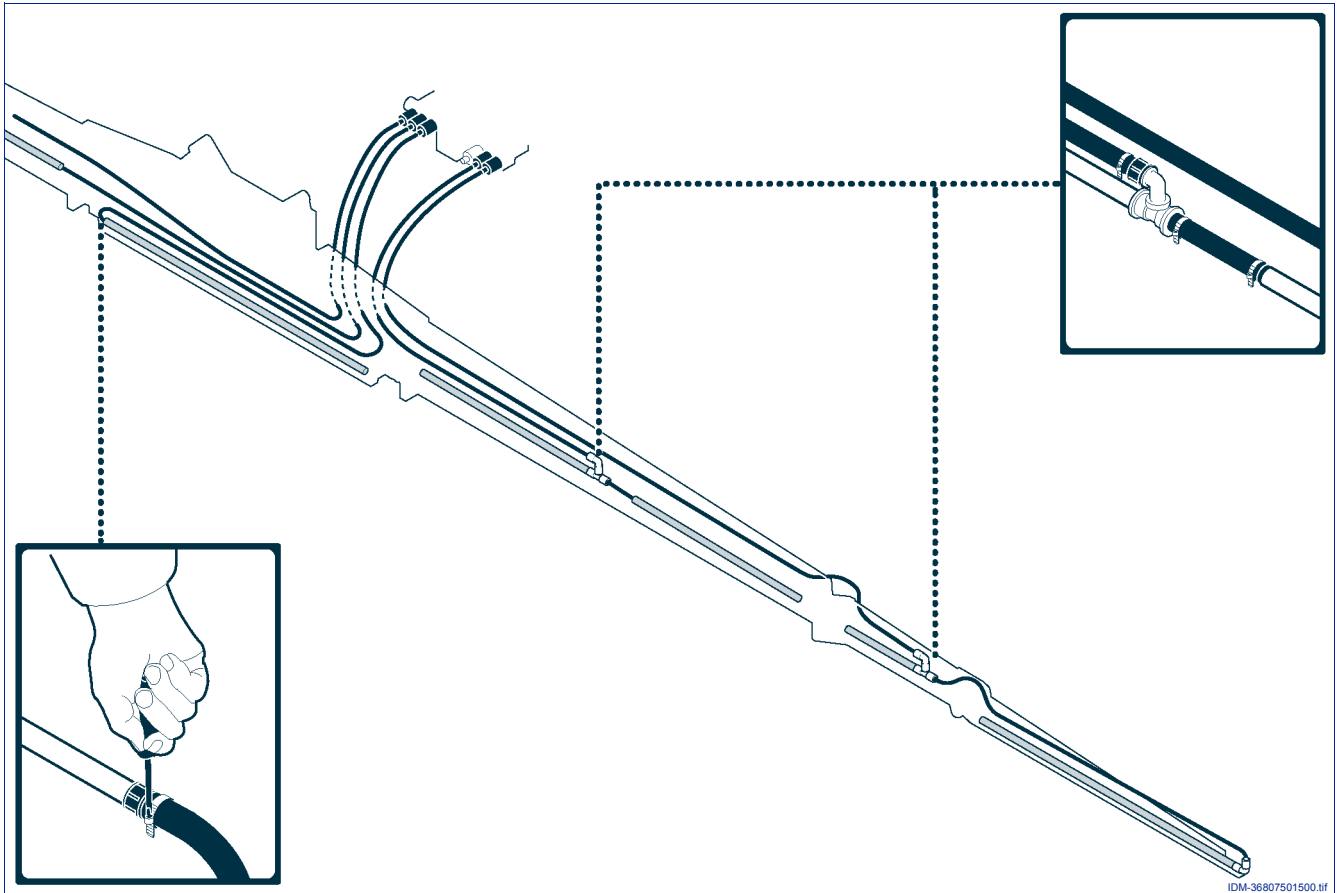
**Do not tighten the clamps too much so as to avoid throttling.**



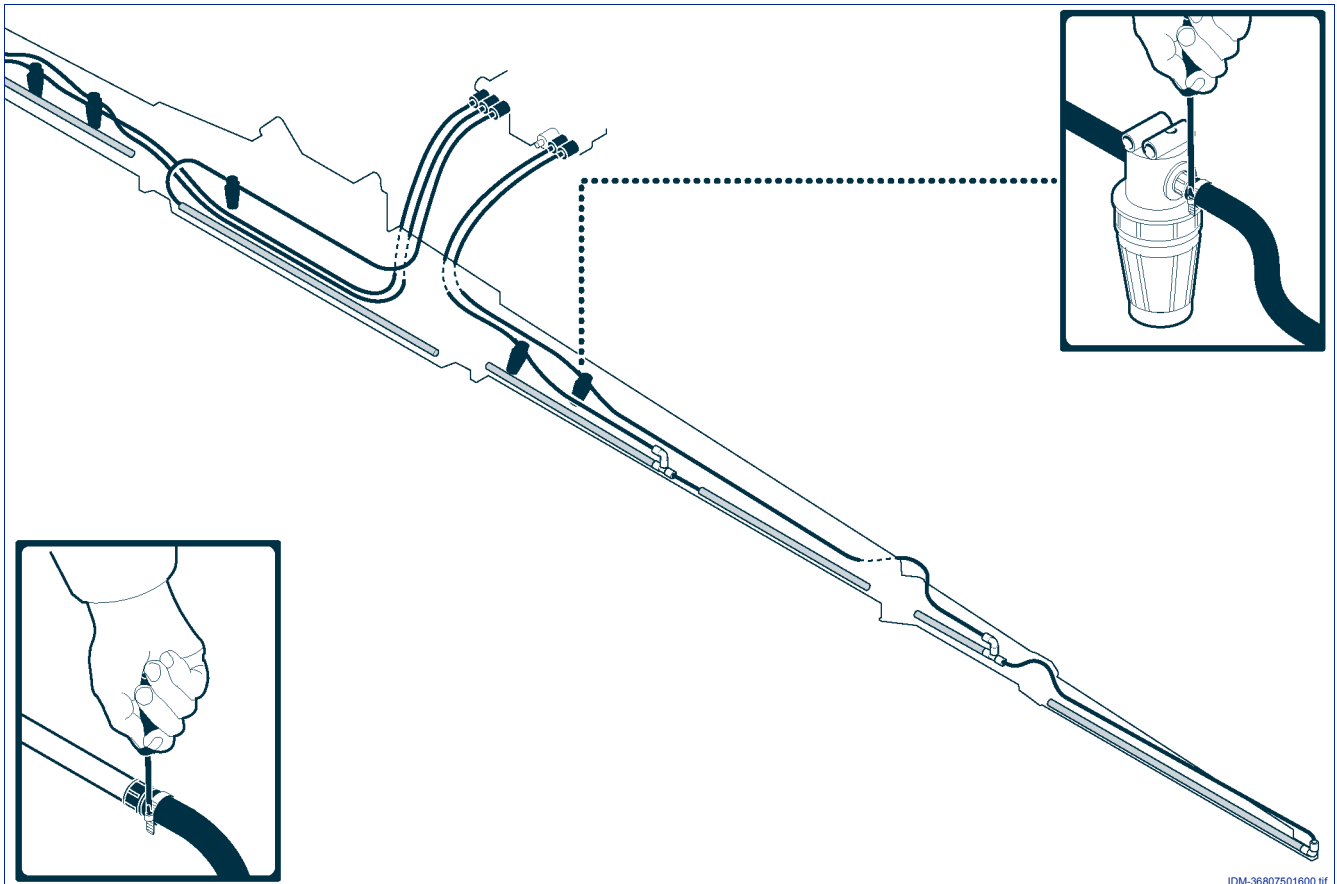
- 5 - Use the Teflon seal (A) and tighten the stainless steel clamps (B) in order to ensure tightness in the joints.



Water connection diagram (5-supply without line filters, 18-24-24,5 metre boom)

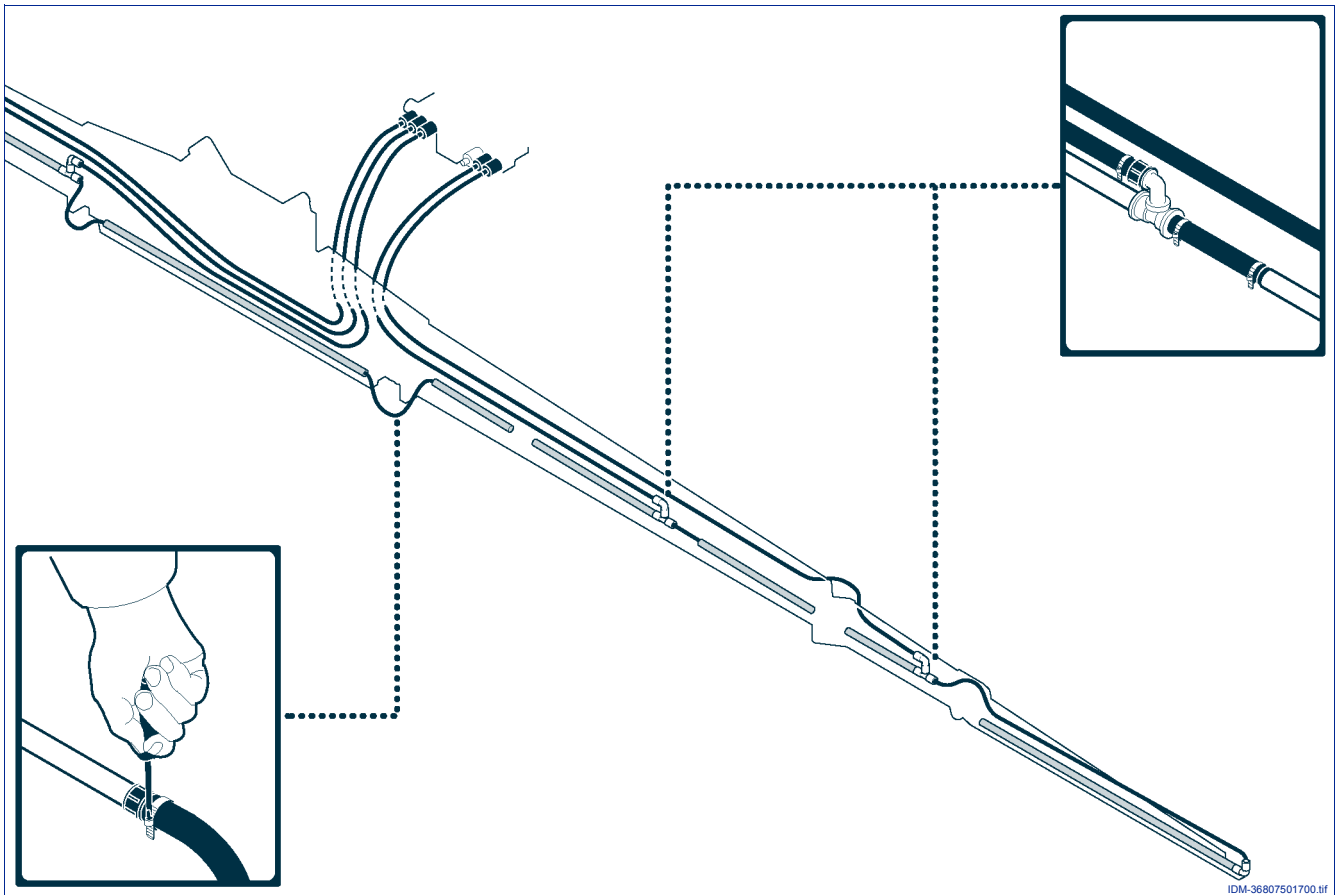


Water connection diagram (5-supply with line filters, 18-24-24,5 metre boom)

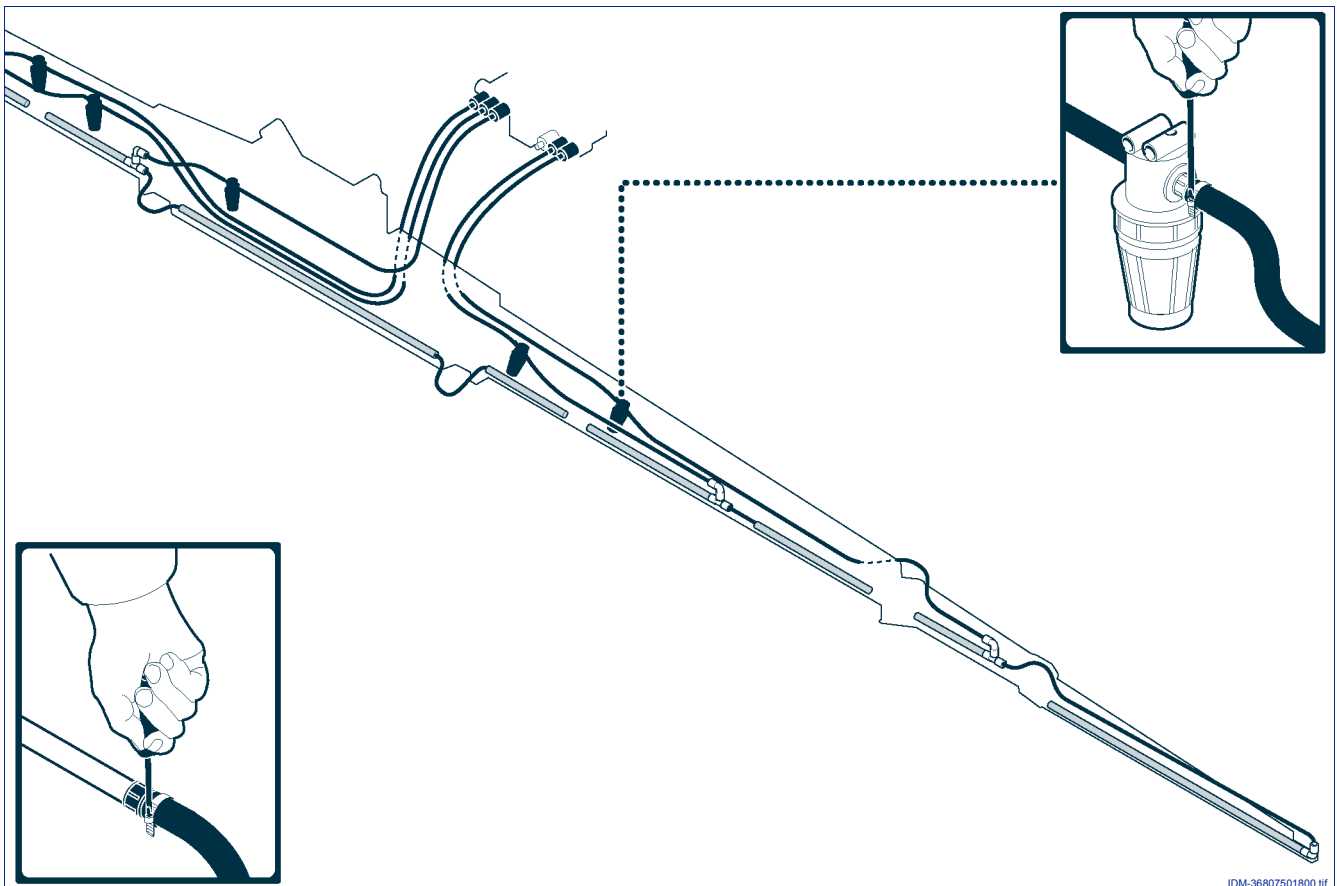


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Water connection diagram (5-supply without line filters, 20-21 metre boom)

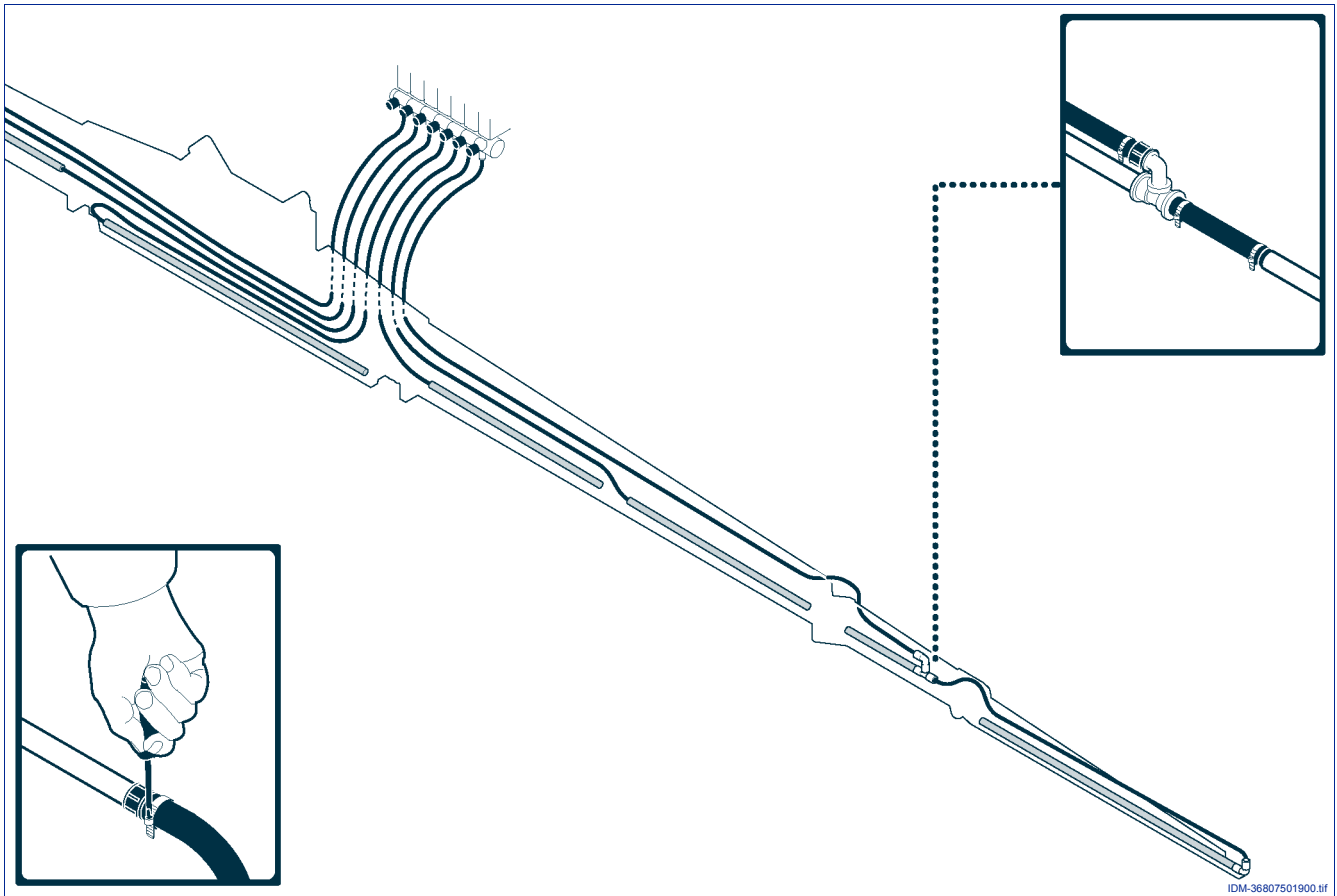


Water connection diagram (5-supply with line filters, 20-21 metre boom)

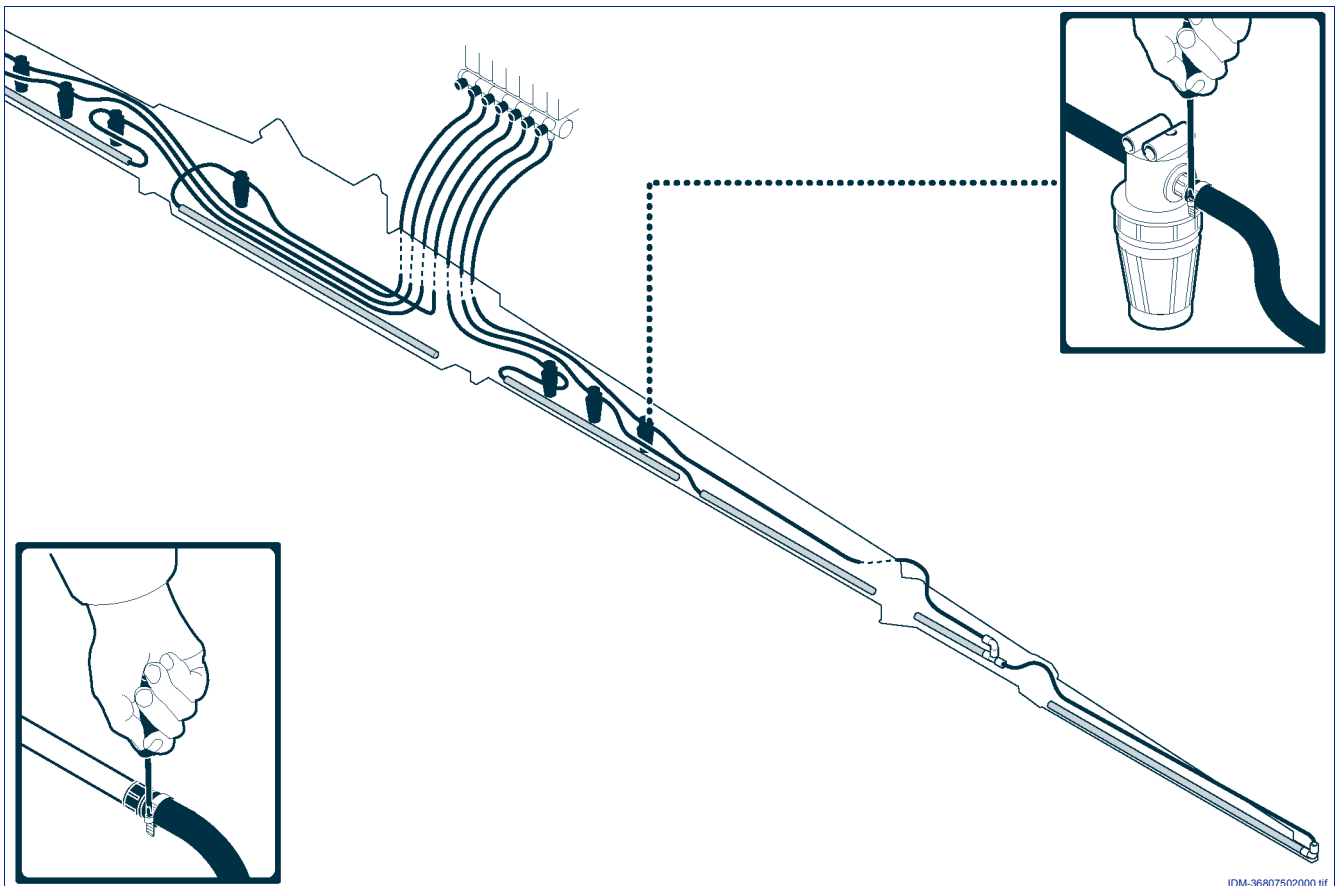


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Water connection diagram (7-supply without line filters, 20-21 metre boom)

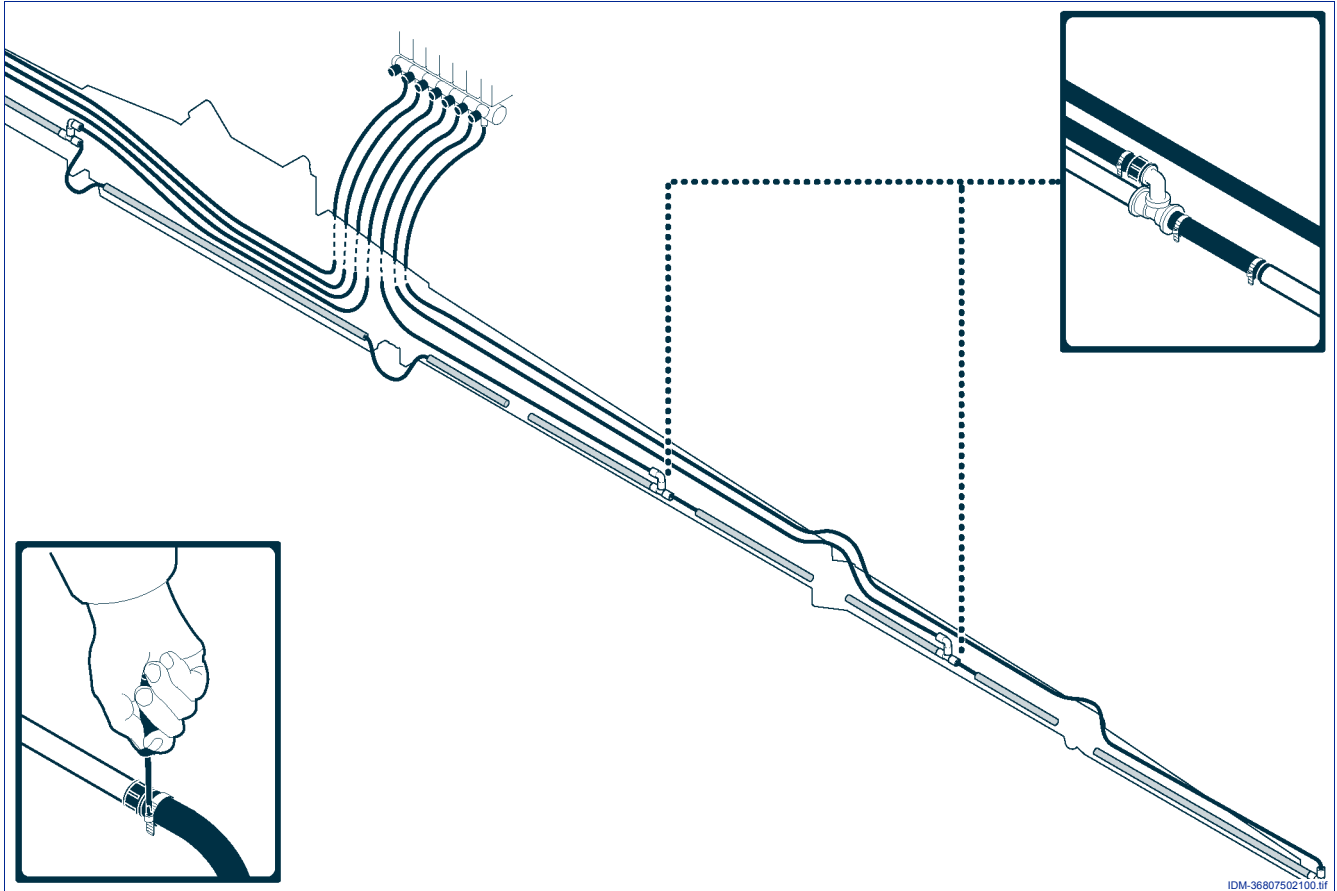


Water connection diagram (7-supply with line filters, 20-21 metre boom)

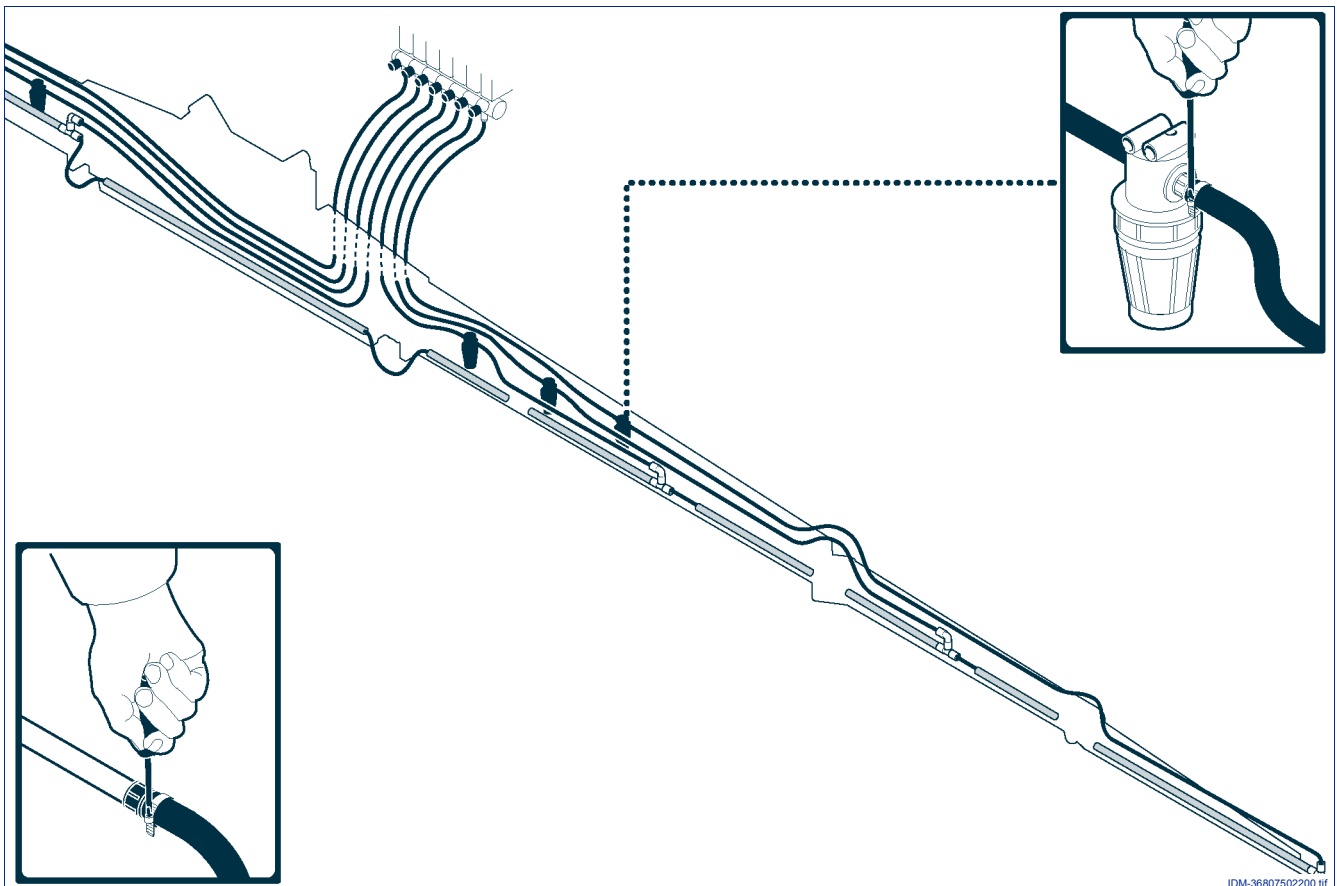


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Water connection diagram (7-supply without line filters, 24-24,5 metre boom)



Water connection diagram (7-supply with line filters, 24-24,5 metre boom)

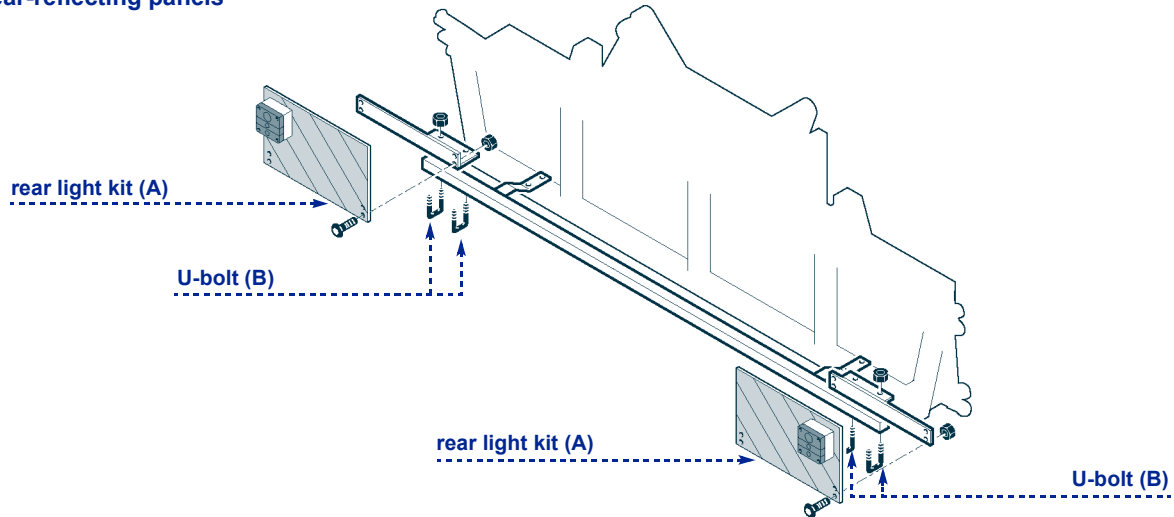


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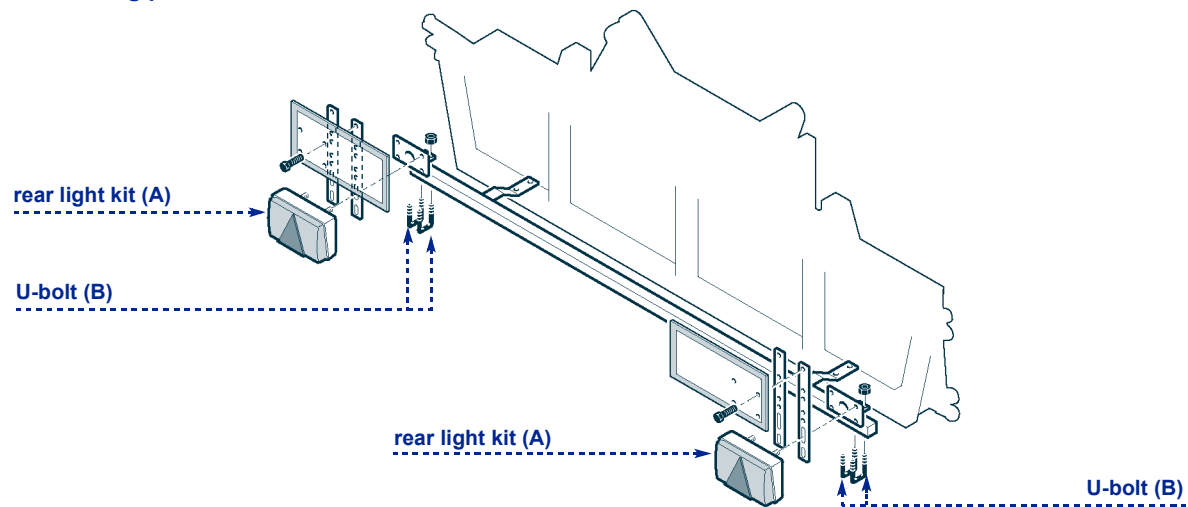
## INSTALLATION OF REAR LIGHT KIT

- 1 - Install the rear light kit (A) and fasten it with U bolts (B).

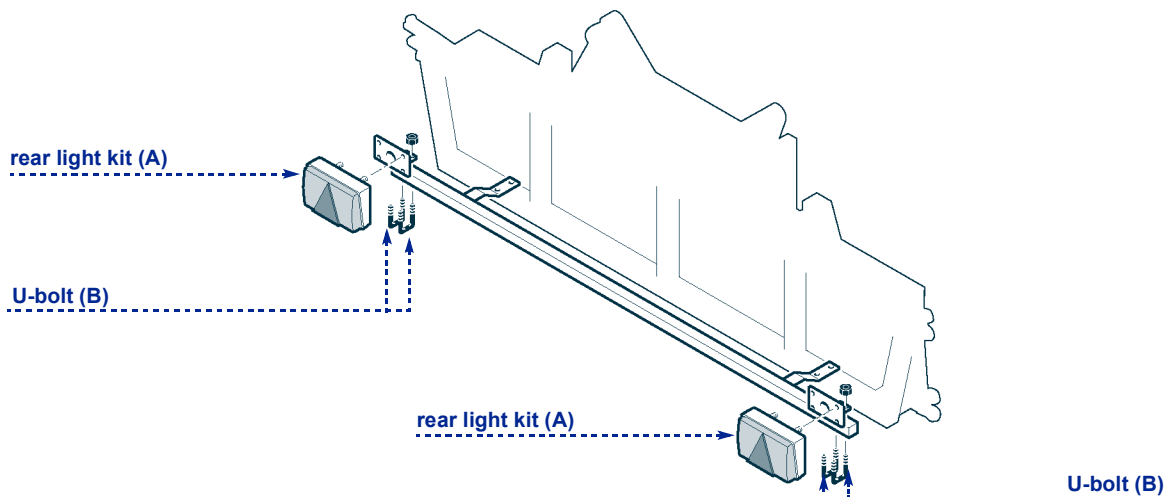
### Rear light kits for mounted units with rear-reflecting panels



### Rear light kits for trailed tanks with rear-reflecting panels



### Rear light kits for trailed tanks without rear-reflecting panels



## INFORMATION ABOUT ADJUSTMENTS

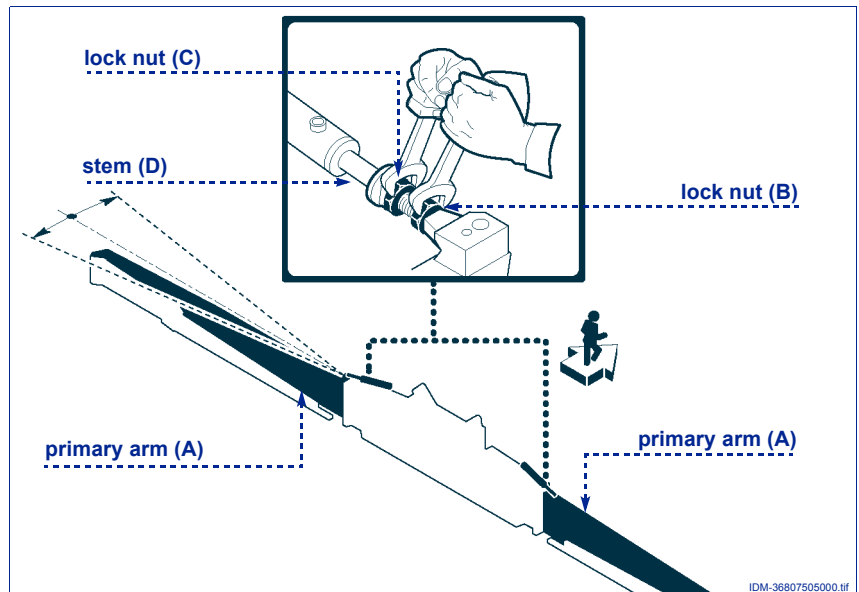
### INSTRUCTIONS FOR ADJUSTMENTS

Whoever makes the adjustments must prepare satisfactory safety conditions in advance in order to ensure their own safety and that of the operators involved.

### ADJUSTMENT OF ARM ALIGNMENT

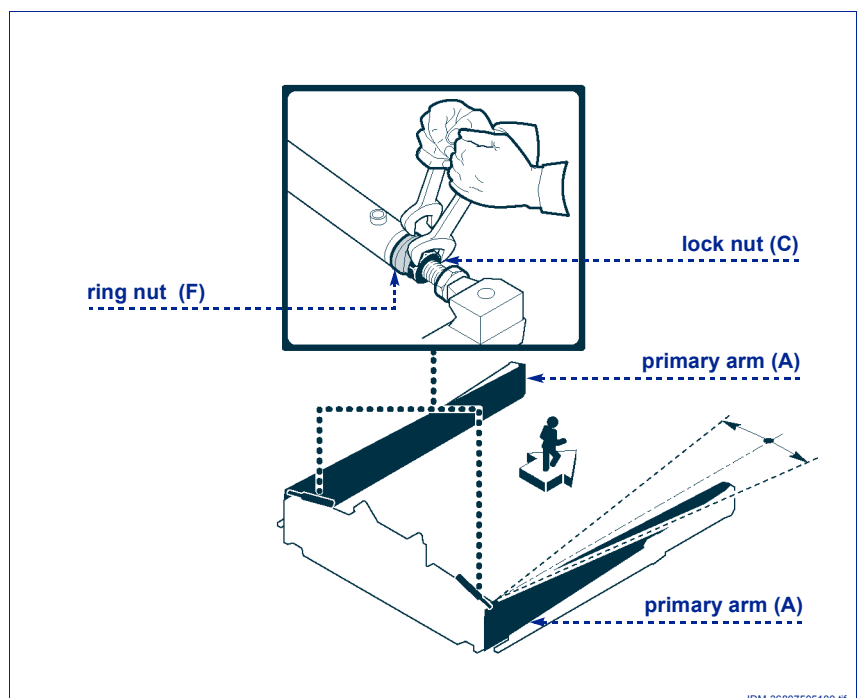
**Unfolding stage:** proceed in the way indicated.

- 1 - Start up the controls to completely unfold the primary arms (A) of the boom and slightly fold them to reduce the thrust pressure on the cylinder.
- 2 - Loosen the lock nuts (B-C), bring them close together and lock one against the other.
- 3 - Work on the lock nuts (B-C) to adjust the extension of the stem (D).
- 4 - Completely unfold the primary arm (A) again and check that it is aligned with the middle frame.
- 5 - Put the lock nuts (B-C) back into their original position and lock them when adjustment is completed.
- 6 - Make the same adjustment on the other arm.



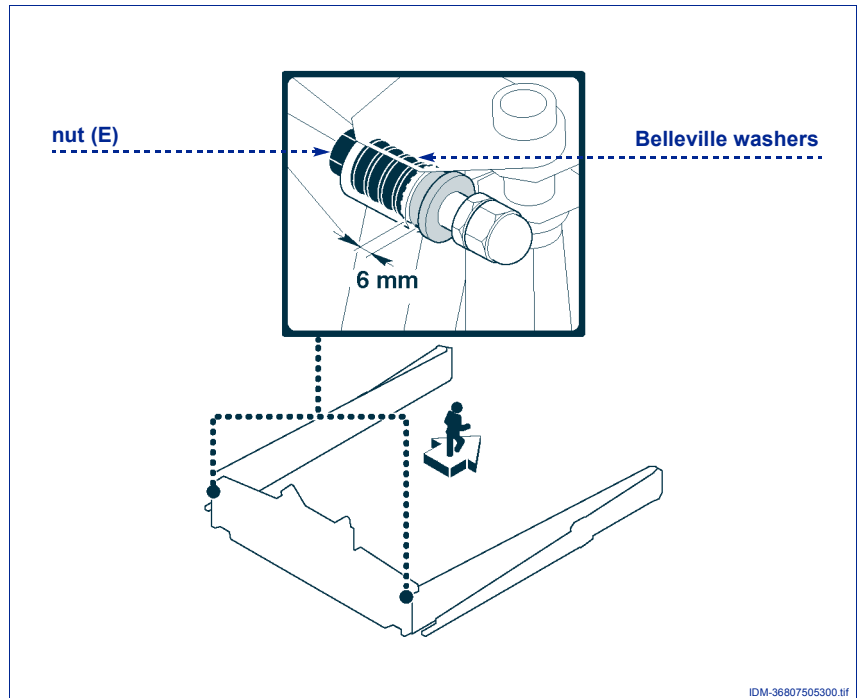
**Folding stage:** proceed in the way indicated.

- 1 - Start up the controls to completely fold the primary arms (A) of the boom and slightly unfold them to reduce the thrust pressure on the cylinder.
- 2 - Loosen the lock nut (C) and adjust on the ring nut (F).
- 3 - Completely fold the primary arm (A) again and check that it is properly resting on the support.
- 4 - Lock the lock nut (C) onto the ring nut (F) when adjustment is completed.
- 5 - Make the same adjustment on the other arm.

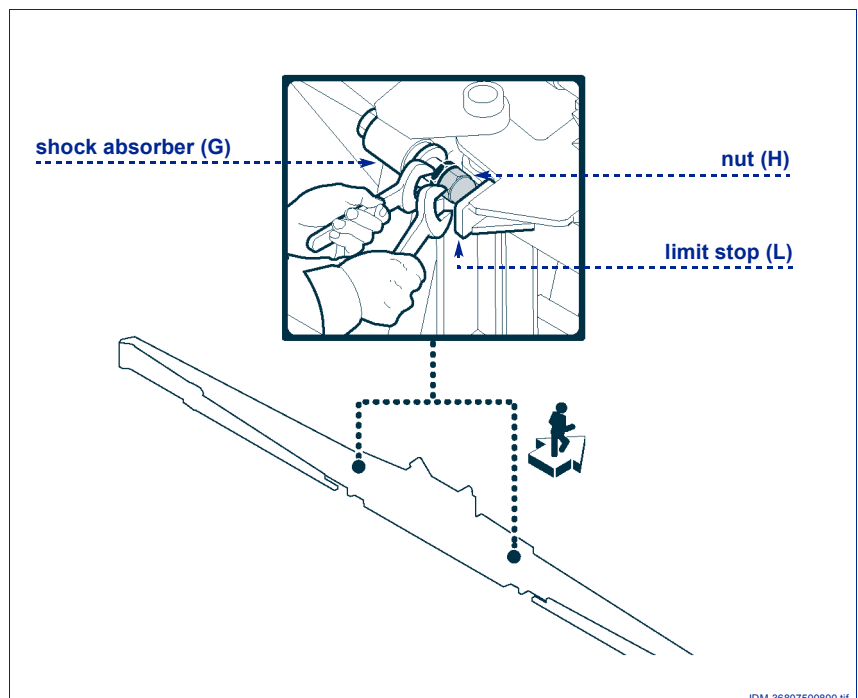


Shock absorber (**G**) adjustment:  
 proceed in the way indicated.

- 1 - Start up the controls to completely fold the primary arms of the boom.
- 2 - Check that the distance indicated in the figure corresponds. If it does not, adjust it by means of nut (**E**).



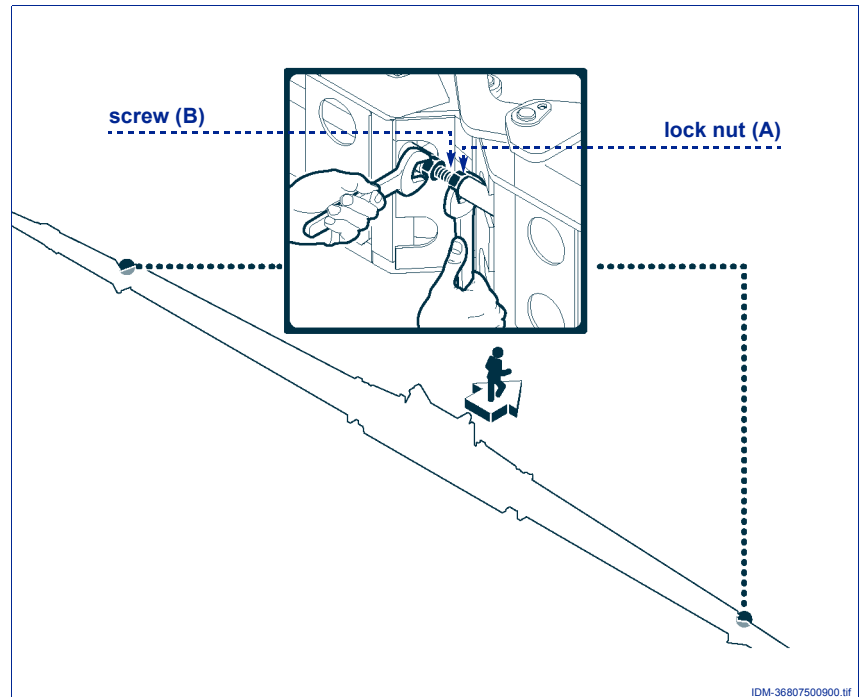
- 3 - Completely unfold the primary arm again and check that the nut (**H**) is resting on the limit stop (**L**) and slightly compresses the washers. Otherwise, complete the adjustment by means of nut (**H**) and lock nut.
- 4 - Lock the nut and lock nut (**H**) when adjustment is completed.
- 5 - Make the same adjustment on the other shock absorber.



## ADJUSTMENT OF EXTENSION ALIGNMENT

Proceed in the way indicated.

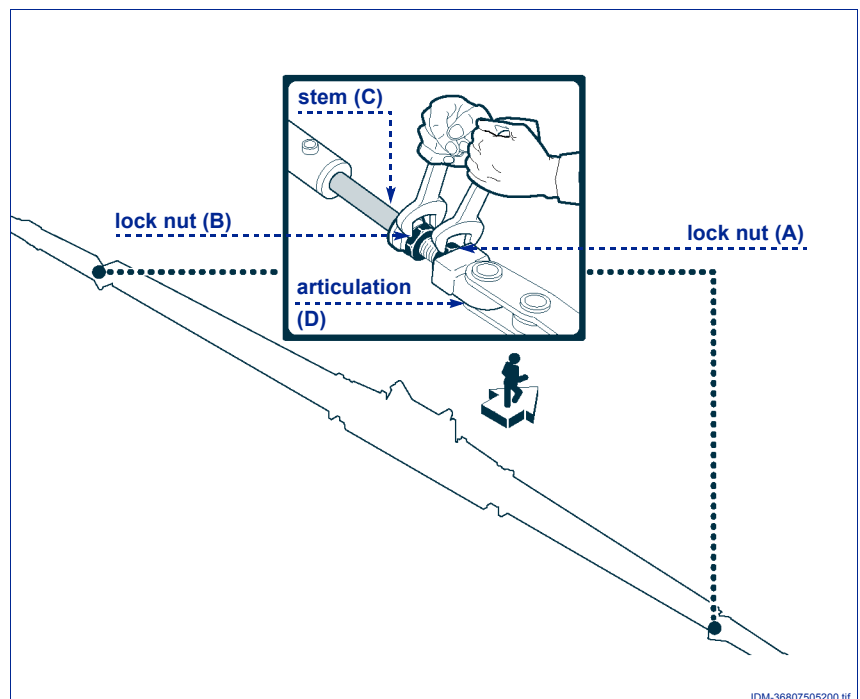
- 1 - Loosen the lock nuts **(A)** and act on the screws **(B)** so that the extensions are aligned with the primary arms.
- 2 - Tighten the lock nut **(A)** when the operation is completed.



## ADJUSTMENT OF EXTENSION OPENING AND CLOSING CYLINDER

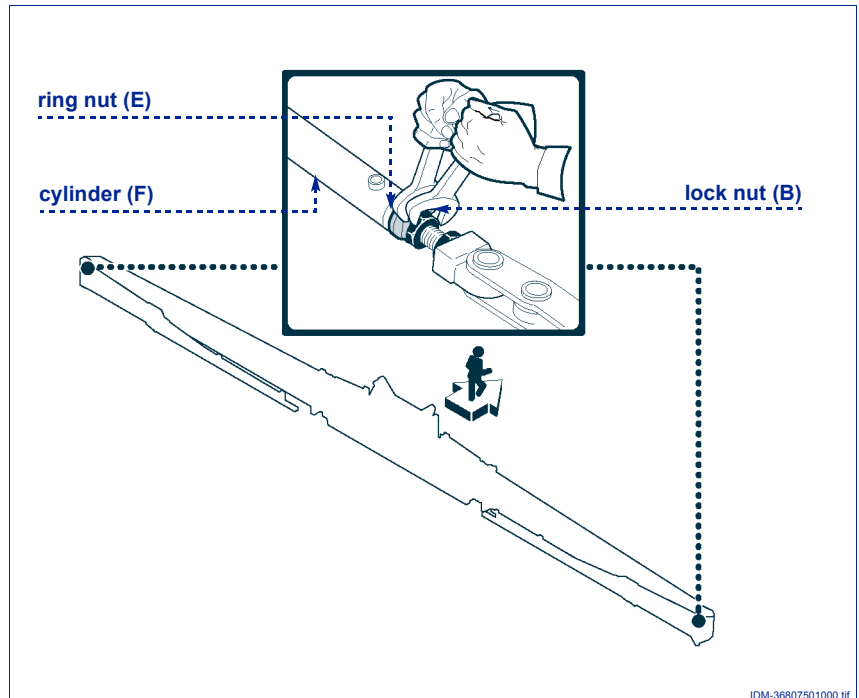
**Unfolding stage:** proceed in the way indicated.

- 1 - Start up the controls to completely unfold the extensions of the boom and slightly fold them to reduce the thrust pressure on the cylinder.
- 2 - Loosen the lock nuts **(A-B)**, bring them close together and lock one against the other.
- 3 - Work on the lock nuts **(A-B)** to adjust the extension of the stem **(C)**.
- 4 - Completely unfold the extension again.
- 5 - Check that the thrust force of the cylinder prevents the articulation between the primary arm and the extension from moving.
- 6 - Put the lock nuts **(A-B)** back into their original position and lock them when adjustment is completed.
- 7 - Make the same adjustment on the other extension.



**Folding stage:** proceed in the way indicated.

- 1 - Start up the controls to completely fold the extensions of the boom and slightly unfold them to reduce the thrust pressure on the cylinder.
- 2 - Loosen the lock nut (**B**), act on the ring nut (**E**) and place it so it rests on the cylinder (**F**).
- 3 - Completely fold the extension again.
- 4 - Check that the thrust force of the cylinder is such as to prevent any unfolding movement of the extension as to the arm.
- 5 - Lock the lock nut (**B**) onto the ring nut (**E**) when adjustment is completed.
- 6 - Make the same adjustment on the other extension.



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## INFORMATION ABOUT USE

### DESCRIPTION OF CONTROLS

The hydraulic spraying boom and the self-levelling device installed on it can be activated in different

modes according both to the hydraulic connection and to the control device installed.

### SELF-LEVELLING DEVICE USE

The self-levelling device is equipped with a locking device that prevents it from swinging when engaged. On request, the self-levelling device can be equipped with a hydraulic locking unit that can be operated with its respective control.

#### Important

**In this case, the self-levelling device's locking device can be locked during unfolding stages and road travelling.**

## USE AND OPERATION INFORMATION

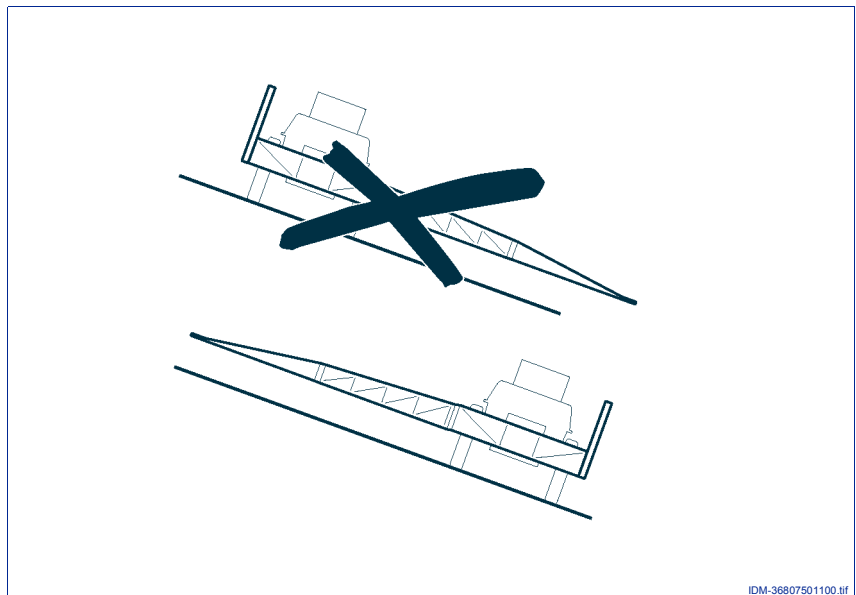
#### Important

**The environmental and territorial conditions of the area where you plan to operate have to be checked every time the equipment is set up for spraying.**

## METHODS FOR UNFOLDING AND FOLDING ARMS

Evaluate the following requirements.

- Check whether or not there are electric lines and assess the risks of contact with the spraying booms.
- Check the gradient of the land so as to evaluate the most suitable conditions for operating in safety. Always bear in mind the maximum gradient limits allowed.
- In the event of spraying with progress transversal to the gradient, carefully follow the instructions given :
  - 1) **Boom unfolding stage:** always unfold the one uphill first, and then the one downhill.
  - 2) **Boom folding stage:** always fold the one downhill first, and then the one uphill.



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### Important

**Lock the self-levelling device (if present) before you unfold and fold the arms.**

- Never work if just the downhill boom is opened.
- Keep the forward speed moderate (8-10 km/h max) so as to prevent the booms from swinging and getting uneven spraying.

### Important

**If it is windy, also stay below the maximum allowed limits (5 m/sec) so as to prevent the product from being dispersed in the surrounding environment. Keep the boom at a lower height and increase the volume of the droplets.**

### Caution - Warning

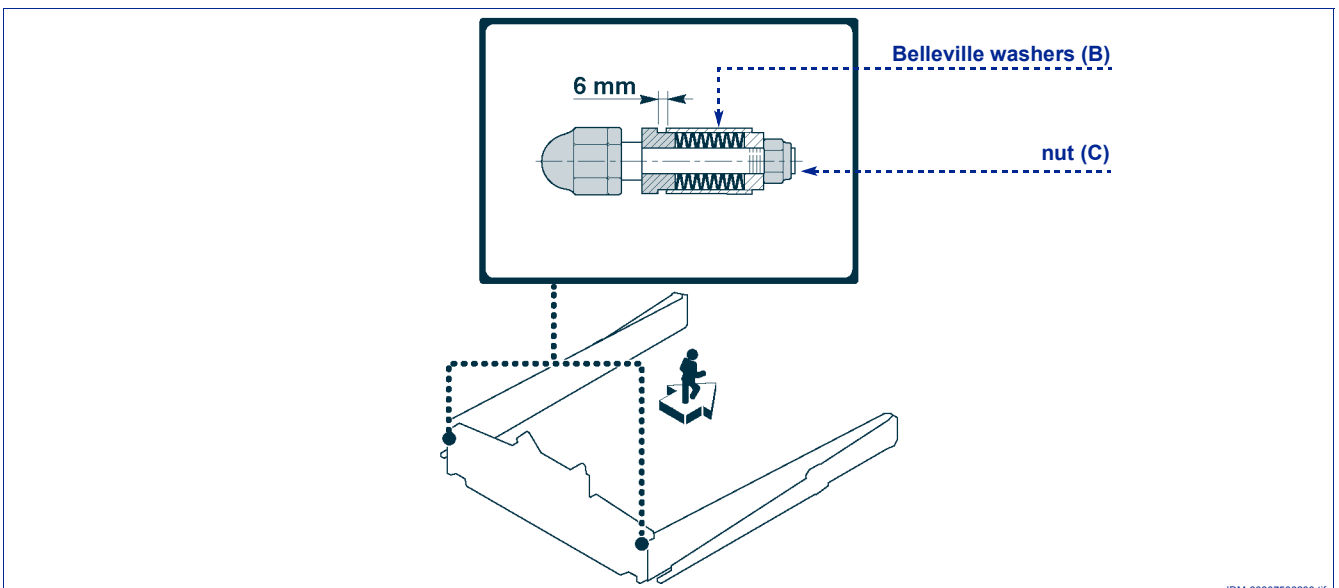
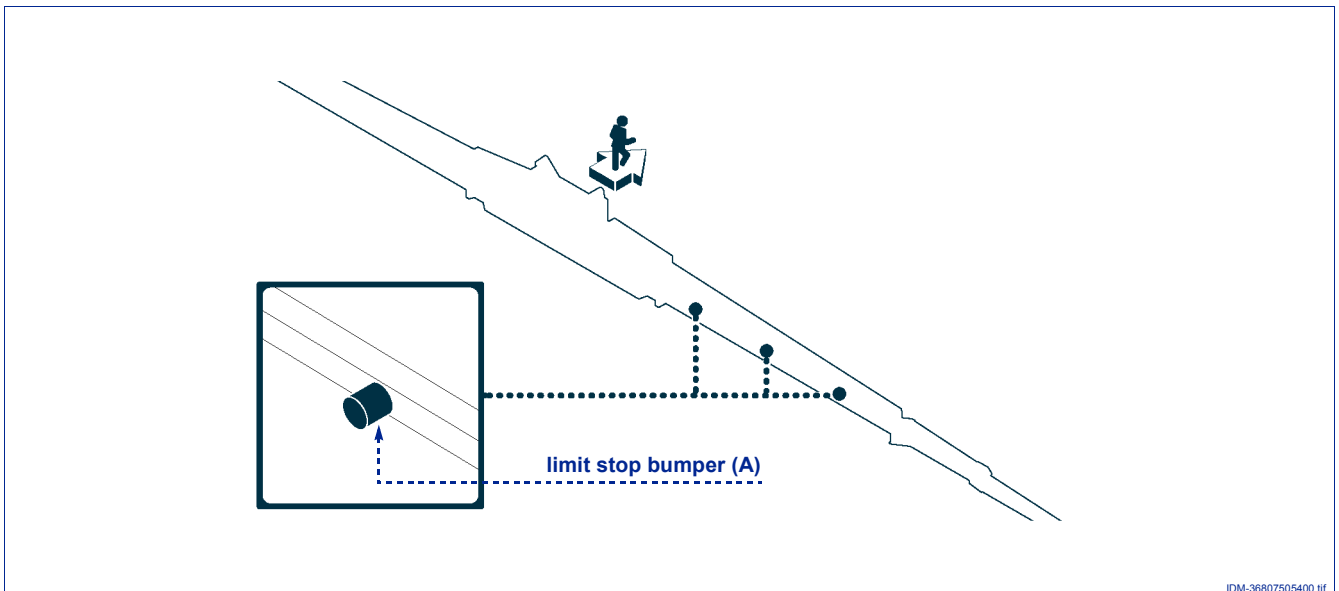
**Prevent strangers from approaching the working area when the machine is in use. Should it become necessary, stop it immediately and make the people found in the risk area move away.**

## INFORMATION ABOUT MAINTENANCE

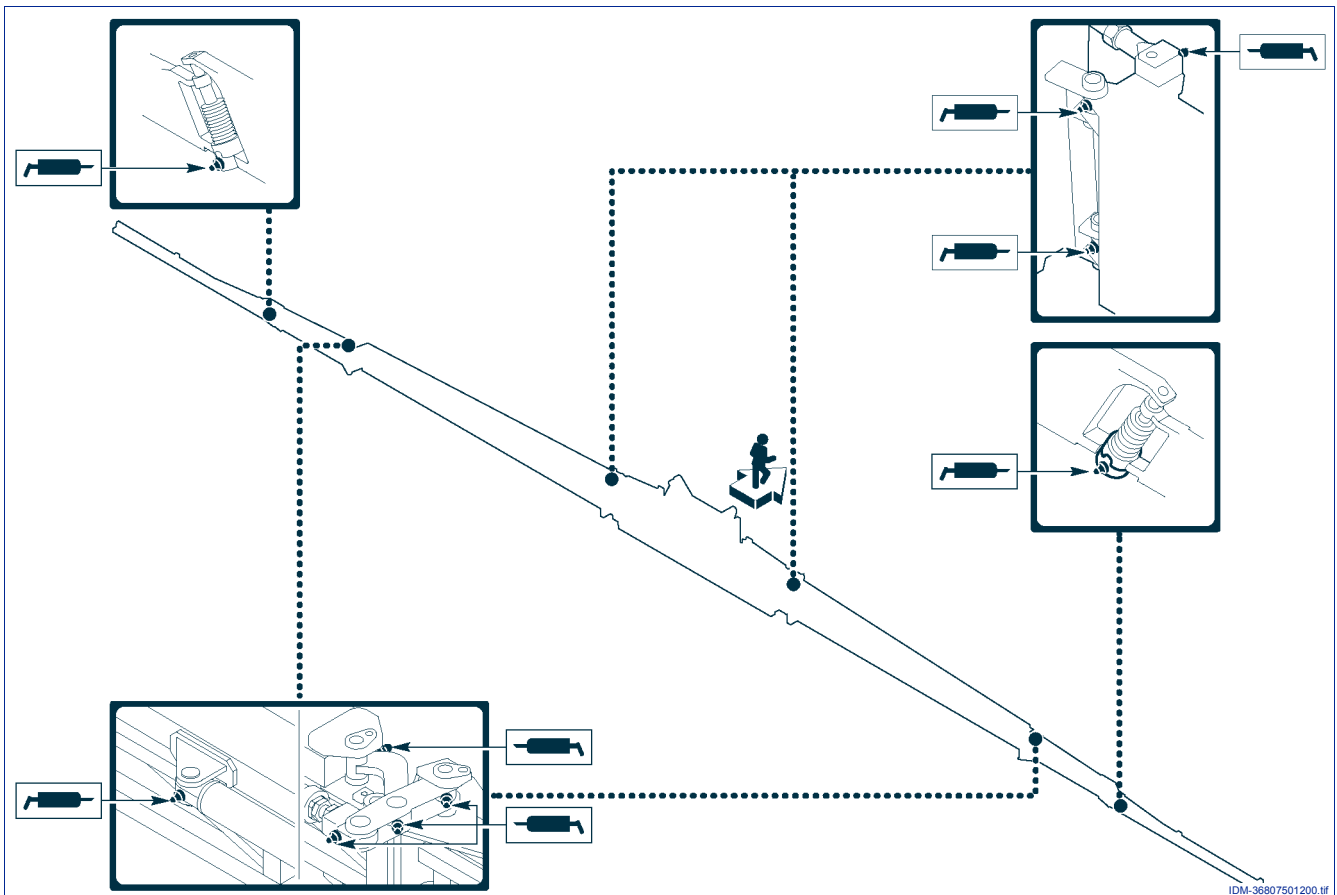
### MAINTENANCE SCHEDULE TABLE

| Interval  | Component                    | Type of intervention             | Operation                                    | Page                           |
|---|------------------------------|----------------------------------|--|--------------------------------|
| <b>Each working day and with each interval higher than one hour</b> | Jets and nozzles             | Clean and rinse the water supply | Make the clean water come out of the nozzles |                                |
|   | Jets and nozzles             | Check operation                  | Clean and replace if necessary               | See "nozzle cleaning", page 26 |
| <b>Each working day</b>   | Jets, nozzles antidrip valve | Check installation               | Install properly                             |                                |
|   | Complete equipment           | Clean and wash                   | Use a clean jet of water                     |                                |

| Interval                      | Component                                     | Type of intervention                            | Operation  | Page |
|-------------------------------|---|---|--|------|
|                               | Complete equipment                            | Check the greased parts                         | Grease if necessary  |      |
|                               |   | Check the condition and tightness of the screws | Tighten and replace if necessary   |      |
|                               |   | Check the painted surfaces                      | Touch up the parts the paint has come off of if necessary  |      |
| <b>Every 40 hours of work</b> | Boom limit stop bumper (A) (see figure below) | Check its condition                             | Replace if necessary   |      |
|                               | Endpiece articulation springs                 | Check its effectiveness                         | Replace if necessary   |      |
|                               | Arm shock absorber<br>Belleville washers (B)  | Check its effectiveness                         | With the arm folded, adjust nut (C) to get the distance indicated in the figure. Replace if necessary. |      |



## LUBRICATION POINTS DIAGRAM



Use **PERSIAN POLIGREASE 2** grease

## CLEANING NOZZLES

Wear protective gloves for this operation.

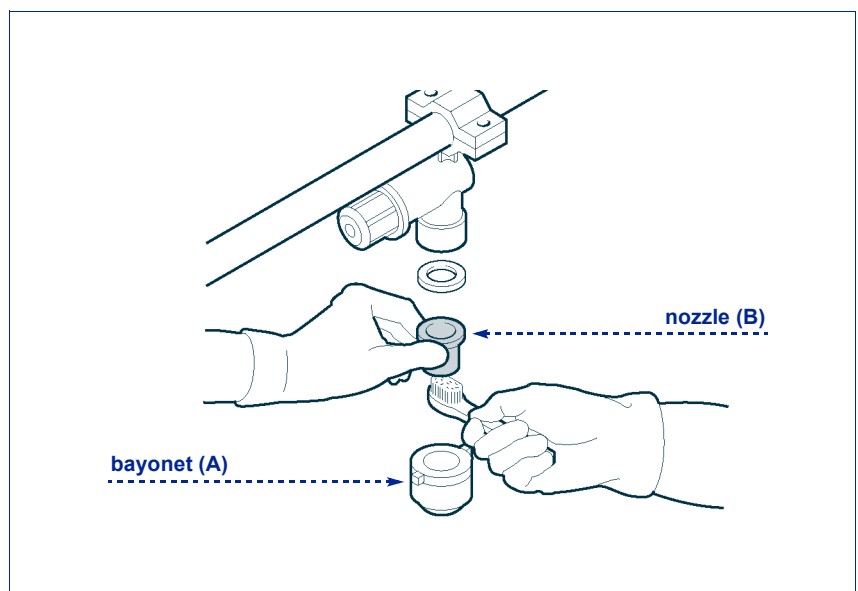
1 - Disassemble the bayonet (A) and nozzle (B).

2 - Clean the nozzle with a jet of air and a small soft-bristle brush.



### Important

**Do not use pointed or sharp objects so as to not damage the hole of the nozzle.**



## PROLONGED INACTIVITY

If the equipment is not used for a long time, adopt the procedures given below.

- 1 - Perform the scheduled maintenance (see page 24).
- 2 - Perform the general cleaning (see page 26).
- 3 - Put in antifreeze fluid or completely empty the hoses in order to prevent the components (pump, control unit, filters, hoses, etc.) from breaking in the

case of severe temperatures.

- 4 - Disconnect the hoses from the pressure gauges.
- 5 - Grease all the components provided with a grease nipple.
- 6 - Place the equipment in a sheltered place accessible only to the operators.

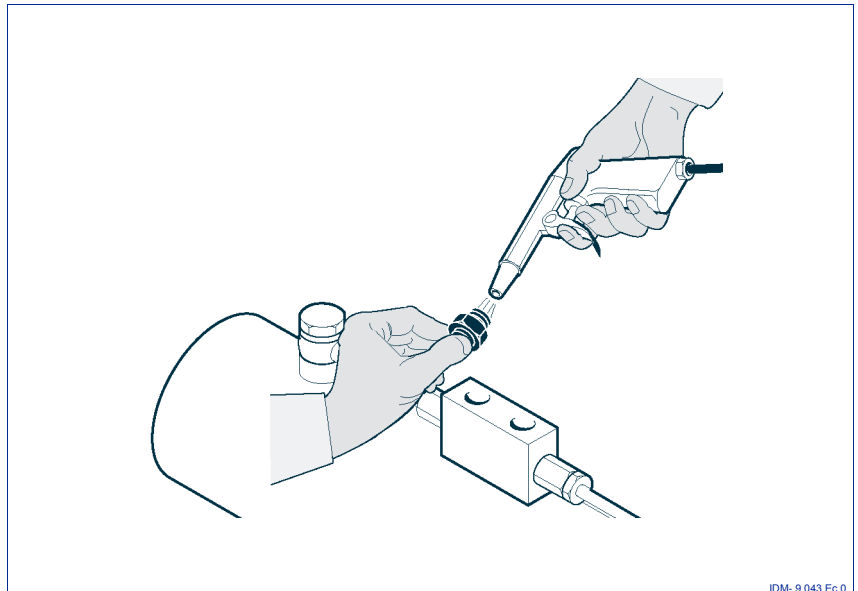
## TROUBLESHOOTING

### TROUBLES, CAUSES, REMEDIES

**Trouble:** the boom unfolds halfway and then stops.

**Cause:** impurities in the calibrated joints of the jacks.

**Cures:** disassemble the joints and clean them.

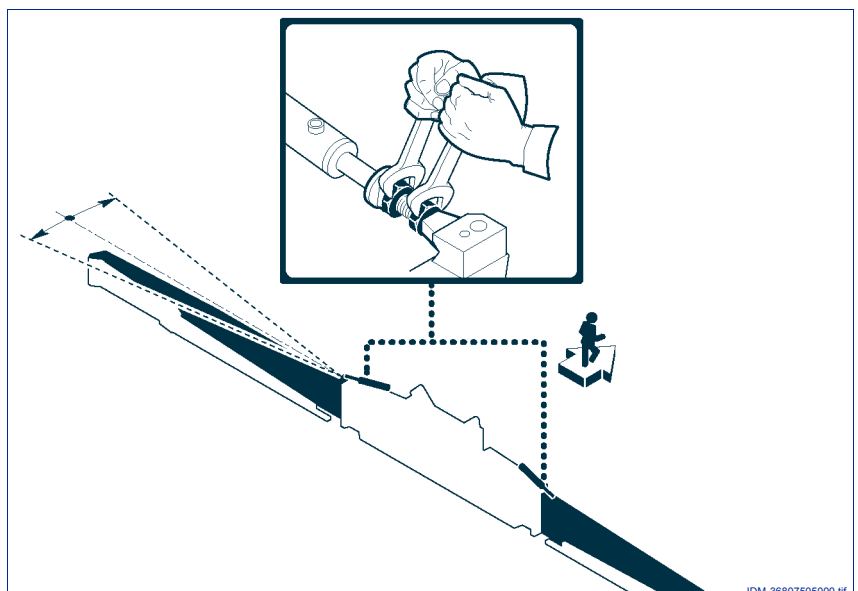


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**Trouble:** the boom is not aligned when unfolded.

**Cause:** unfolding cylinder not adjusted.

**Cures:** adjust the alignment of the arms (see "arm alignment adjustment")



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**Trouble:** the extensions are not aligned when unfolded.

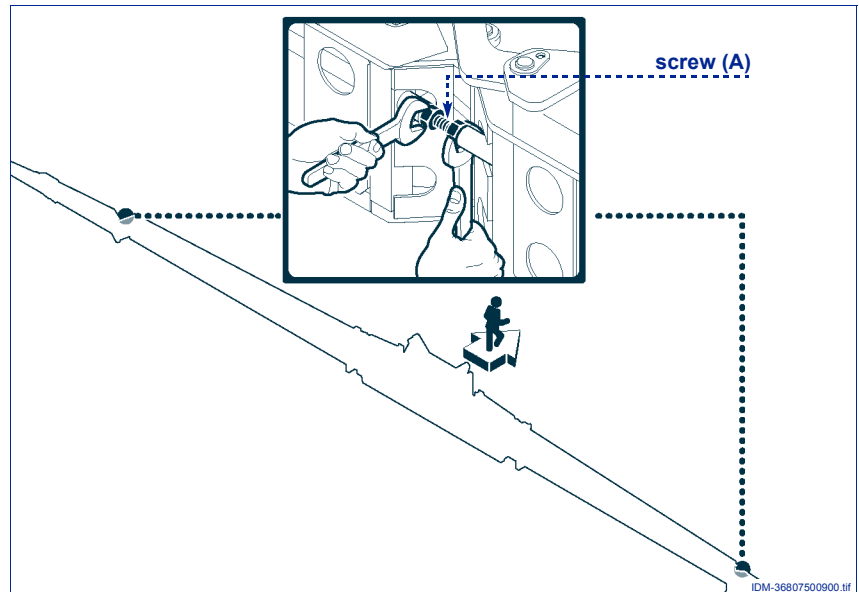
**Cause:** stop bolt not adjusted.

**Cures:** work on the screw (A) to adjust the alignment of the extensions (see “extension alignment adjustment”).

**Trouble:** the complete extension moves as to the primary arm with the boom unfolded and/or folded.

**Cause:** extension unfolding cylinder not adjusted.

**Cures:** (see “extension unfolding and folding cylinder adjustment”).



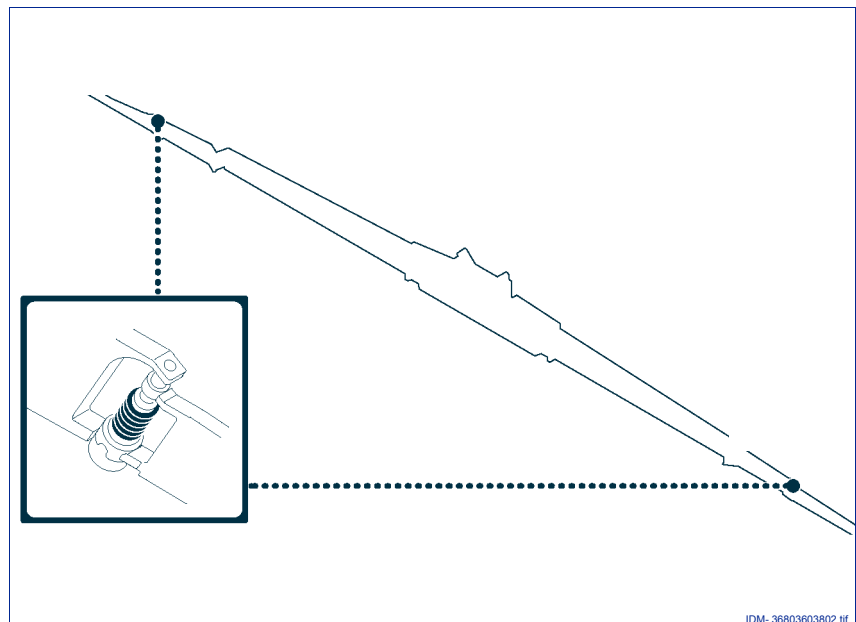
**Trouble:** the endpiece extension is not steady enough with the boom unfolded.

**Cause:** the articulation is loose.

**Cures:** compress the spring or replace it if it is no longer effective (see “spring and articulation bushing replacement”).

**Cause:** the self-lubricating bushing of the endpiece extension is worn.

**Cures:** replace the bushing (see “spring and articulation bushing replacement”).



## INFORMATION ABOUT REPLACEMENTS

### REPLACEMENT OF ARTICULATION SPRING AND BUSHING

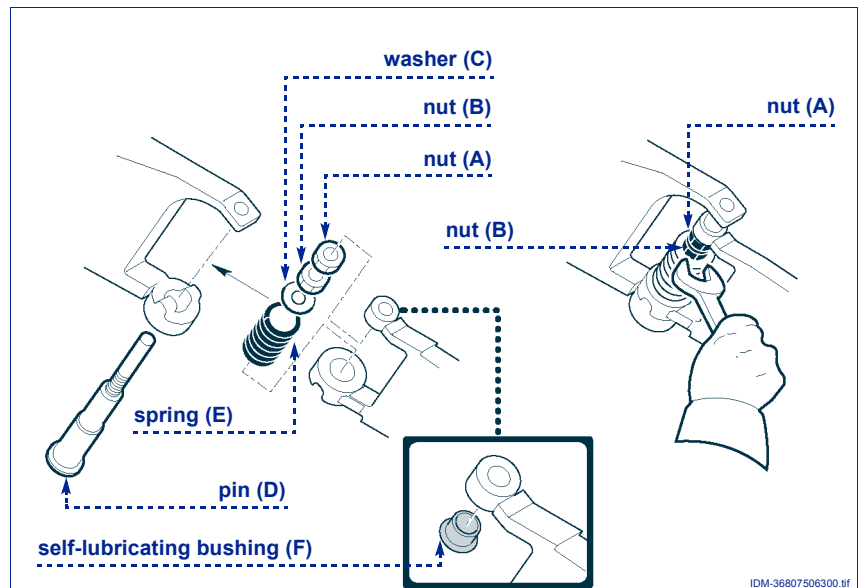
Proceed in the way indicated.

- 1 - Unscrew the nuts (A - B) and extract the washer (C).
- 2 - Remove the pin (D) and the spring (E).
- 3 - Check the efficiency of the spring (E) and the wear of the bushing (F) and, if necessary, replace them.

#### Important

The self-lubricating bushing (F) is to be inserted by apply pressure with the limit stop facing downwards and locked with LOCTITE in order to ensure it is secure.

- 4 - Reassemble the parts (D - E - C - B - A) as shown in the figure.
- 5 - Tighten the nut (B) until you get the right compression of the spring (E).
- 6 - Tighten the lock nut (A) when the operation is completed.



### DISPOSING OF THE EQUIPMENT

#### Important

This intervention has to be carried out by skilled technicians and in accordance with the current safety regulations. Do not disperse in the environment non-biodegradable products,

lubricating oils and non-ferrous components (rubber, PVC, resins, etc.). Dispose of them according to the local regulations in force.

